Ready for traffic in five weeks is Washington's new South Capitol St. Bridge (see p. 24)

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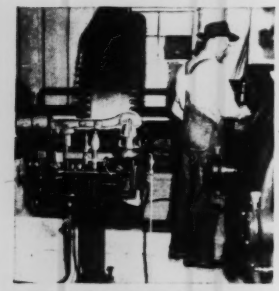
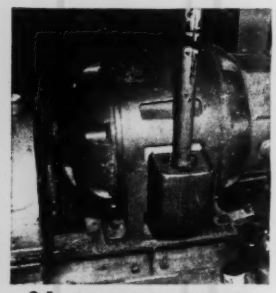
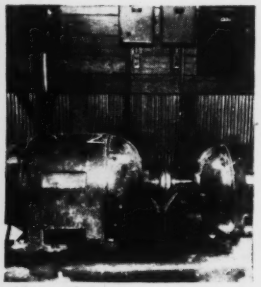


G-E 500-hp motor drives two 3000 cu. ft. Ingersoll Rand air compressors

Synchronous motor starter and control for air compressors



G-E motor-generator set operates frequency converters that run vibrators



200 hp G-E motor operates the hoisting mechanism of the American Revolver Crane

Contractors at Clark Hill Dam rely on G-E powered equipment to meet stiff work schedule

When you're working around the clock on a big construction job, there's no time for shutdowns. Your equipment has got to be reliable, easy-to-maintain, and safe. That's why Allstates Constructors, Inc., and the Corps of Engineers are making extensive use of *electrically driven* construction equipment—from vibrators to giant revolving cranes—for placing concrete at Clark Hill.

More and more machinery manufacturers and contractors are discovering the time- and money-saving advantages of dependable *electric drive.* And with G-E drive they get the added advantage of expert engineering assistance in application, installation, and service—wherever the job may be.

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Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.

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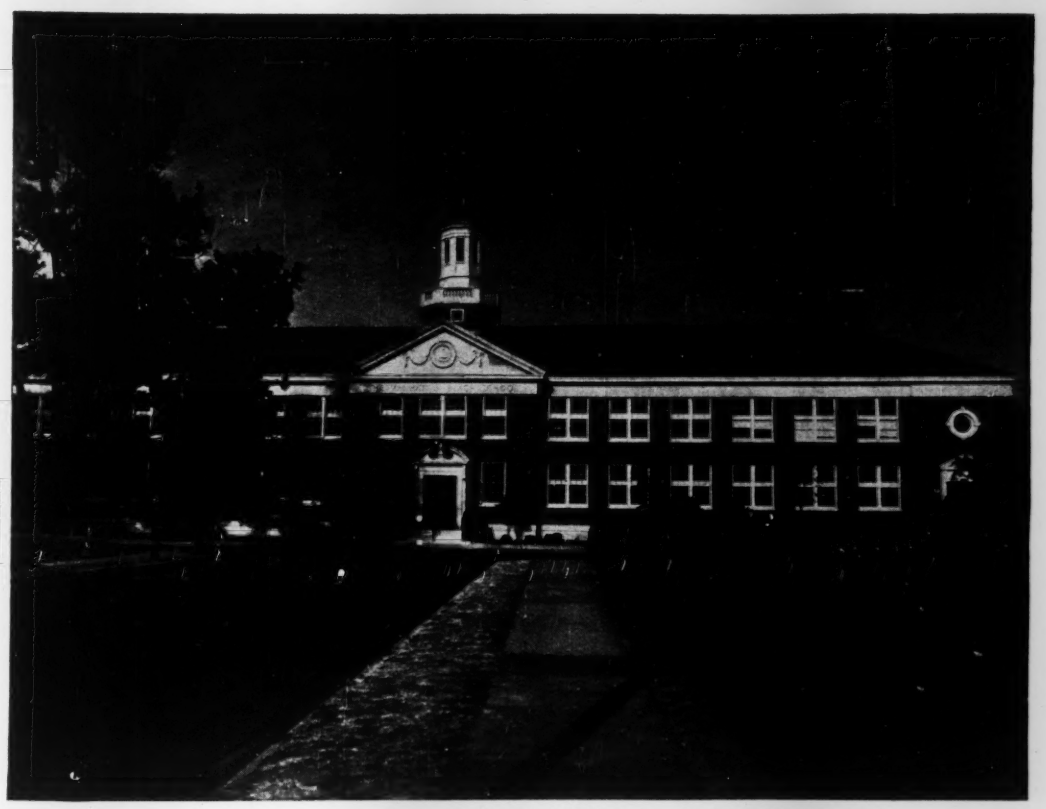

Architect: Eric Kebbon, Board of Education, New York
Contractor: Caristo Construction Corp., New York
Steel Fabricator and Erector: Dreier Structural Steel Co., Inc., New York

New Public School in Brooklyn

This recently-completed addition to the New York City school system is Public School 195, on Shore Boulevard, Brooklyn. A two-story structure designed for youngsters up to 12 years of age, it has facilities for 558 pupils. It consists of 13 classrooms, a kindergarten, playroom, and snackroom. In addition, it has office and lounge space for supervisory personnel.

Hidden beneath the facing of red brick is a 412-ton steel framework of Bethlehem Structural Shapes.

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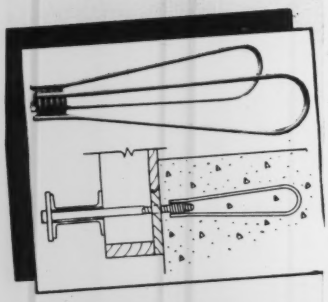

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ENGINEERING NEWS-RECORD

VOLUME 143 DECEMBER 1, 1949 NO. 22

WALDO G. BOWMAN
Editor

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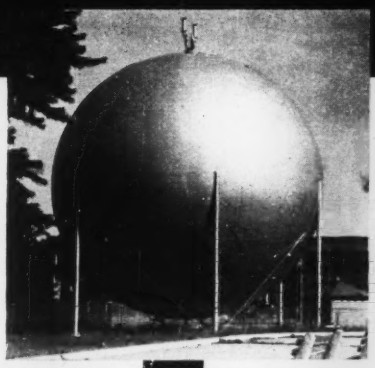
How the HORTONSPHERE provides **BETTER** Gas Service



AT EGG HARBOR, NEW JERSEY

This 50-ft. diam. Hortonsphere improves gas service by giving a much-needed boost to pumping main pressures during peak load periods. It is located in a region where customer demand has exceeded the capacity of the mains. Whenever the pressure in the mains falls below a pre-determined figure, gas flows rapidly into the system from the Hortonsphere. Quick-feeding is assured because the gas is stored in the Hortonsphere under 25 lbs. per sq. in. pressure. The lift that this high-pressure container gives to falling pressures means better gas service for 1,500 consumers in the immediate district.

AT NEWBURGH, NEW YORK

This is the third Hortonsphere the Central Hudson Gas and Electric Company has installed at its Newburgh, New York, plant. These high-pressure gas holders help the Company provide adequate gas service in the City of Newburgh and in adjacent communities. Gas is delivered from the spheres to a local low pressure system of mains operating at 6 in. of water pressure and to an intermediate pressure system which feeds into the distribution mains through district regulators. The outlying communities are supplied through high pressure transmission lines. With Hortonspheres like this available, gas can be stored until needed. In this way, Hortonspheres increase the effective capacity of gas-producing facilities.

AT GREENWICH, CONNECTICUT

This 60-ft. diam. Hortonsphere helps the Greenwich Gas Company provide better service to an area containing 4,000 customers. It does this by holding, under pressure, a reserve supply of gas which can be used to meet widely fluctuating demands. The pressure normally varies between 20 and 50 lbs. per sq. in. in the transmission main which supplies the entire Greenwich system. When this pressure falls to 18 lbs., the Hortonsphere automatically feeds gas back into the main. The compressor which refills the Hortonsphere is also automatically controlled. The operating pressure range for this Hortonsphere is from 25 to 65 lbs. per sq. in.

Hortonspheres for gas storage are built in sizes ranging from 20 to 65 ft. in diam., for pressures from 20 to 100 lbs. per sq. in. Write our nearest office for full details.

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Los Angeles, 14 . . 1511 General Petroleum Building
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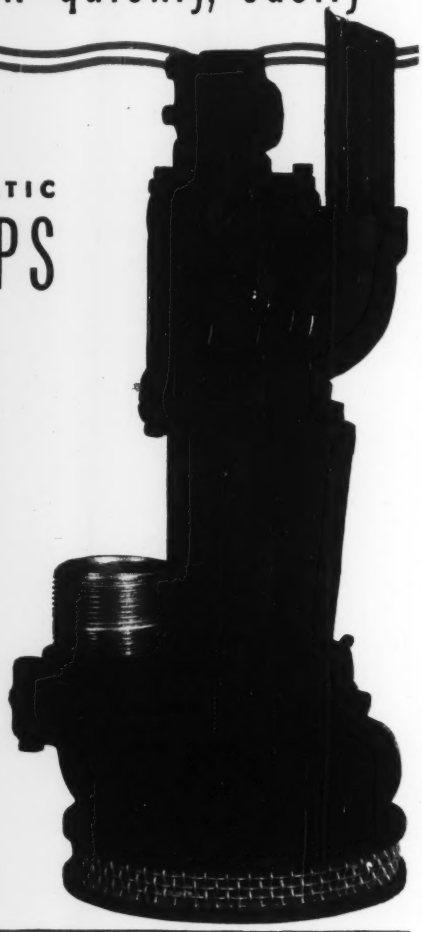

EXCLUSIVE WITH THOR—Extra capacity *automatic* Impeller Shaft lubrication for continuous operation up to a full shift without regreasing. Continuous air pressure force feeds lubricant, prevents foreign matter from working into impeller shaft bearings.

FOR COMPLETE DEPENDABILITY, Thor pumps feature selective capacity control for varying conditions, double acting speed governor, one-piece air-tight housing, "No Freeze" large exhaust system. Self priming.

PUMPS WILL OPERATE partially or fully submerged in dirty water, oil, sludge or sewage, with a capacity of 230 gallons per minute at a 10-foot head, 114 gallons per minute at a 60-foot head, at 90 lbs. pressure.

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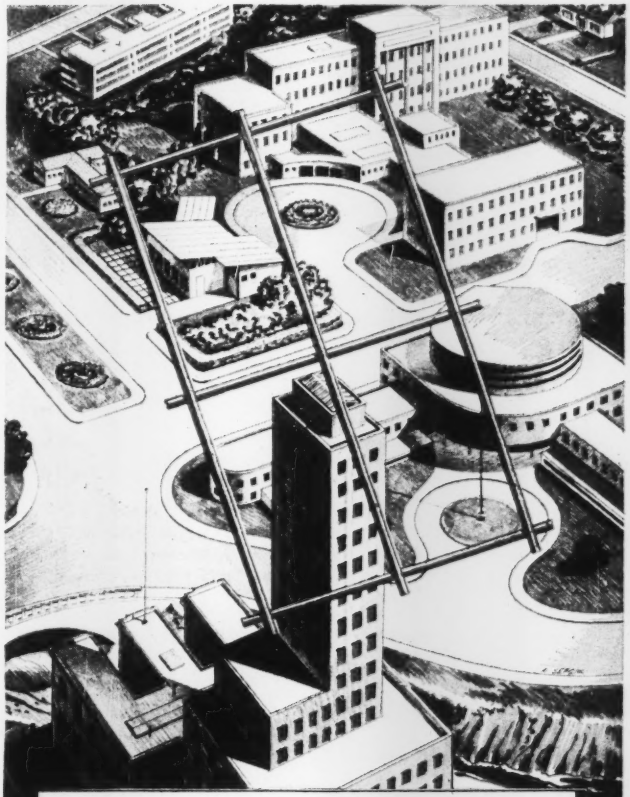
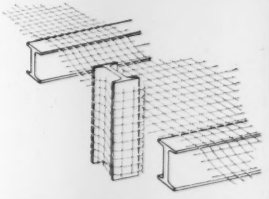
For these two important reasons

specify American Welded Wire Fabric



This sketch shows where American Welded Wire Fabric is used in modern concrete buildings. It reinforces walls, floors and roofs, can be draped over beams and girders and wrapped around pillars. Many uses of concrete in irregular structural shapes are made practical by American Welded Wire Fabric reinforcement.



[redacted] it is the most efficient reinforcement. Its many small members of cold drawn, high yield-point steel fortify all parts of the concrete structure. Rolls and flat sheets of American Welded Wire Fabric provide continuous reinforcement in buildings, bridges, tunnels, etc. It can be wrapped around pillars, beams and girders, laid in steps, stairs and other irregular structural shapes.

[redacted] it is the most economical reinforcement. You need less steel, less concrete, when you specify American Welded Wire Fabric, for thinner slabs carry higher allowable stresses. The mesh can be placed quickly and easily, lies flat and stays in its proper place during all construction operations. All of which adds up to important savings in construction time, in material and labor costs.

These are the main reasons why so many architects and engineers specify American Welded Wire Fabric reinforcement for all types of concrete construction . . . not only in skyscrapers, hospitals, and schools, but in fine modern homes and in small home developments as well.

When you are planning any kind of concrete construction our technical staff will be glad to supply complete data on specific design and standard styles of fabric that are available. Write to our nearest office today, you incur no obligation.

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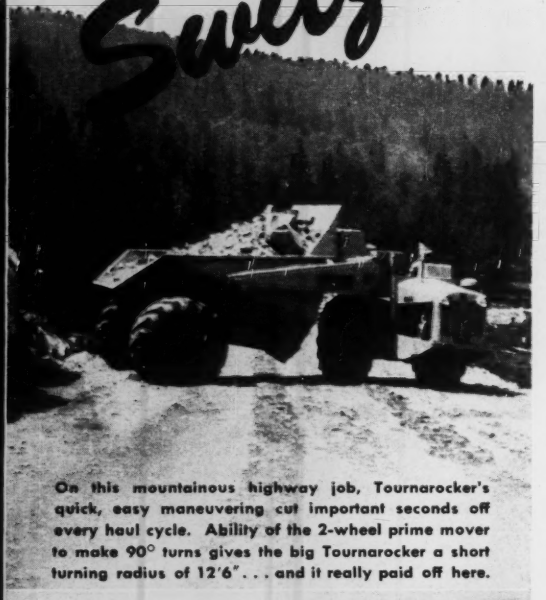
Every type of concrete construction needs

AMERICAN WELDED WIRE FABRIC
reinforcement

USS

UNITED STATES STEEL

Horner and Switzer move 220,000 with 3 rear-dump



On this mountainous highway job, Tournarocker's quick, easy maneuvering cut important seconds off every haul cycle. Ability of the 2-wheel prime mover to make 90° turns gives the big Tournarocker a short turning radius of 12'6"... and it really paid off here.

220,000 yards of mountain-top granite . . . altitudes up to 8300 feet . . . narrow, precipitous haul trails . . . and continual heavy rains, almost every other day. Those were the conditions which Contractors Horner & Switzer tackled on relocation of U. S. Hwy. 280, from Granby Dam to Monarch Lake, Colorado. They drove in a fleet of 3 LeTourneau rear-dump Tournarockers, teamed them up with a 2½-yard rock shovel, and got the following big-yardage results:

Averaged 10½ bank yds. per load

Contractor's crew estimated the 150 h.p. rock wagons carried 10½ bank yards of granite each trip. They were loaded in an average of 7 passes from the 2½-yard dipper. In extreme hard digging, it often took the shovel 4½ minutes to load each rig. Haul cycles were so fast that on most haul distances only 2 of the Tournarockers were needed to keep the shovel busy. For example:

1240' haul, dump, return in 4¼ min.

Hauls on the job ranged from a few feet up to a half-mile. Checked on a 1240-foot, one-way haul, including a 170-foot stretch of 13% adverse grade, each Tournarocker took only 4¼ minutes to travel, dump, and return to the shovel.

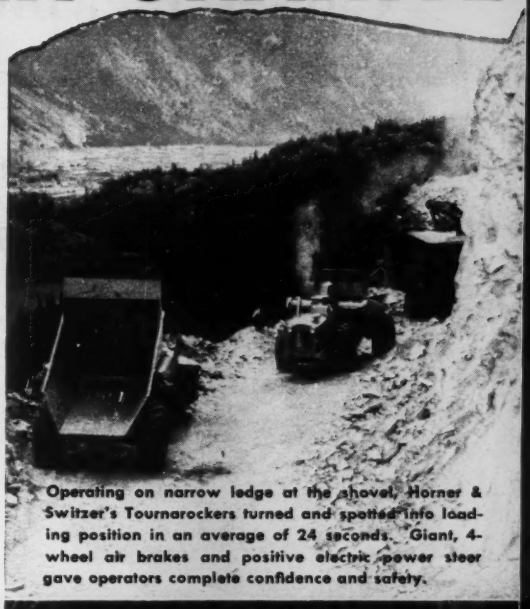
These fast cycles on the mountain-side trails were possible because Tournarocker's 4-wheel air brakes let operators haul

Dumping took only 8 seconds, with Tournarocker's powerful, fast-acting, electric body hoist. Vertical dump position and the smooth, clean, streamlined body cleared loads instantly. Power is on the Tournarocker's *front* wheels.

LETOURNEAU PEORIA, ILLINOIS **TOURNAROCKERS**

HIGH SPEED on RUBBER PLUS TRACTION ADVANTAGES of a CRAWLER

Yds. MOUNTAIN GRANITE
TOURNAROCKERS



Operating on narrow ledge at the shovel, Horner & Switzer's Tournarockers turned and spotted into loading position in an average of 24 seconds. Giant, 4-wheel air brakes and positive electric power steer gave operators complete confidence and safety.

heavy loads at maximum speeds with complete safety. 4,108 square inches of braking surface . . . *more on one wheel than most haulers have on all four wheels* . . . gave sure, safe stops *every* time. Short, 90° turns, and positive electric steer by push-button control, permitted quick turning and spotting on the dump and at the shovel.

8-second dump

Dump was fast . . . simple, electric body hoist tilted the wide, streamlined body to vertical position . . . cleared the 10½-yard loads in just 8 seconds, total hoist and dump time. Because of their front-wheel drive, and holding action of powerful 4-wheel brakes, the Tournarockers safely backed up to edge of bank, and dumped loads over the bank eliminating rehandling . . . saving dozer clean-up.

All these Tournarocker advantages for big-payload, fast-cycle hauling gave Horner & Switzer the lowest-cost answer on their tough mountain highway job. What's more, they drove their big 16-ton capacity rigs to the job from Denver . . . made the 120-mile trip, via the Berthoud Pass, in less than a day.

If you haven't checked the new, low hauling costs possible on your work with these revolutionary rear-dump Tournarockers, better get all the facts from your LeTourneau Distributor right away. Write or call him NOW!

Big 11'2" x 7'10" top opening, plus low body position, gave the shovel operator an easy-loading target. These big-capacity LeTourneau rock wagons maneuvered in close . . . hauled an average load of 10½ bank yds. of granite.

Tournarocker-Trademark Tournapull, Tournadozer-Trademarks Reg. U.S. Pat. Off.

Send Today for complete facts **to R. G. LeTOURNEAU, Inc., Peoria, Ill.**

We're interested in . . . ☐ specifications ☐ price ☐ job analysis on the 16-ton, rear-dump, E16 Tournarocker

NAME..... TITLE.....

COMPANY..... TYPE OF BUSINESS.....

STREET..... CITY..... STATE.....

Would also like information on ☐ 13.5-yard C Tournapull ☐ 7-yard D Tournapull ☐ 180 h.p., rubber-tired Super C Tournadozer

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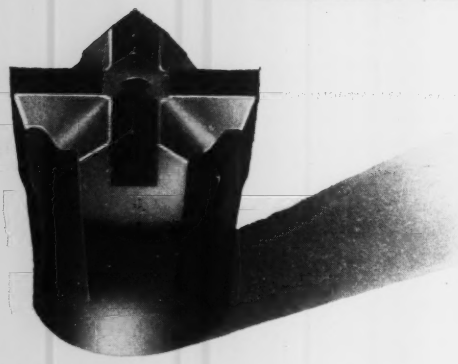
Drill faster, 50% or more
Boost tonnage 20% or better
Finish more rounds per month!



Now it has been Proved that you can do this, and much more, with the I-R CARSET JACKBIT

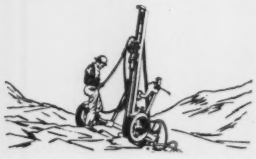
More than two years of actual field experience have given positive proof of what the CARSET JACKBIT can do – under all drilling conditions, in all kinds of rock. The results today are creating a complete revolution in rock-drilling performance and economy.

For here is a Carboloy-set bit that is repeatedly out-drilling and out-lasting a steel bit usage by 50-to-1, 100-to-1, and in many cases as much as 400-to-1! Uniformly high drilling speed is maintained for the full depth of the hole – without the progressive slackening in speed of quick-dulling steel bits. Bit changing is practically eliminated, longer steel changes can be used, and single-gauge holes can be drilled to any practical depth. This means more efficient drilling cycles, more rock or ore broken per shift – usually *20%* or more.

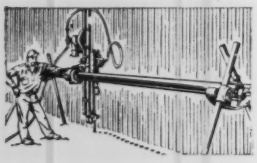
For the complete story on the CARSET JACKBIT, write today for your copy of our new 36-page, pocket-size catalog, Form 4091.

HERE ARE A FEW TYPICAL REPORTS ON CARSET PERFORMANCE

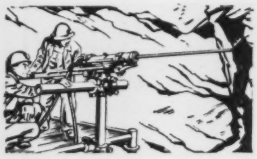
A MINING COMPANY, drilling in a very hard quartzite, reports that CARSET JACKBITS have so multiplied drilling speed that miners can now drill and blast on the same shift. With steel bits, blasting previously had to be done on the second shift. This customer has converted to CARSET JACKBITS 100%.



ON A LARGE DAM PROJECT, 2" CARSET JACKBITS were used with 4" Wagon drills operating in hard dense basalt. These bits drilled 24-ft. holes in 22 minutes, while steel bits previously used required 66 minutes for an 18-ft. hole (with 10 bit changes). Footage was increased from 120 to 261 ft. per shift.



IN A GRANITE QUARRY, CARSET JACKBITS have given such outstanding performance that steel bits are no longer used. Previously, with quick-dulling steel bits, the bit reconditioning shop had to be run two 8-hour shifts a day. This operation has now been almost eliminated.



A MINING COMPANY, in driving a 12 x 20 foot 97-hole heading in taconite, required an average of 49.8 hours to pull a 5-foot round. With CARSET JACKBITS they pulled $6\frac{1}{2}$-foot rounds and cut this time to 18.5 hours. Accurate cost records showed a direct saving of $92.69 per foot of drift, or $602.48 per round.

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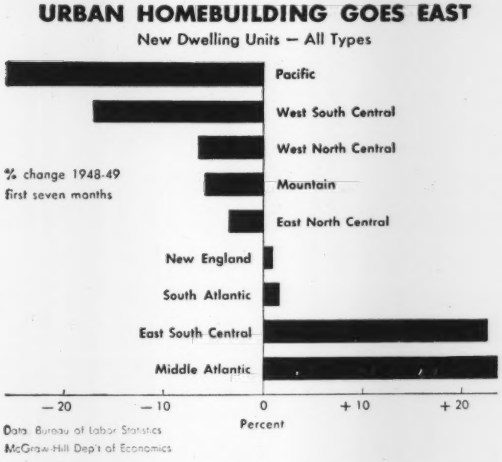

Homebuilding Shifts East

This year has seen a basic shift in homebuilding—and one that lends strength to the industry's prospects for 1950.

The shift is really double-barrelled. As the chart above shows, the number of houses started in urban places, cities and towns with populations of more than 2,500, in Western regions is down sharply from a year ago—but starts in the East are up. Along with this change has come a large-scale shift to rental-type housing among the units being started this year. Both shifts bespeak health in the homebuilding market.

● THE BIG QUESTION in the geographical pattern of homebuilding was this: Los Angeles, and the other "new areas" where population had grown rapidly in the postwar years, had an all-out homebuilding boom in 1947 and '48. Los Angeles county alone accounted for almost 10% of all the homes built in the country last year. The pattern was natural enough but it raised a major question as to whether or not the homebuilding industry could keep going in high once the unusual demand for homes in the newer areas was satisfied. Could there be enough of an increase in the homebuilding activity in the old, established cities to compensate for the decline expected in Los Angeles, Dallas and other super-boom areas? The chart says "yes."

Although it is based on Bureau of Labor Statistics figures that cover only seven months of 1949, the change is sharp enough to indicate that the shift has been made successfully. And, in the meantime, the industry as a whole has surged ahead to score an all-time record for houses started. When the final figures are in, they will show about one million homes begun in 1949.

● ALONG WITH THIS SHIFT from West to East has come a big increase in rental units. The number of multi-family dwellings started in the Middle Atlantic states this year, for example, is roughly three times what it was a year ago. Again, the Mountain, Pacific, and West South Central states show a decline in multi-family units. But every other area is up sharply. In fact, in what BLS labels "all urban places," communities with 2,500 people or more, the number of apartments built for three or more families is up from 63,000 units to 94,000 in the first seven months of the year. For the year as a whole, that suggests a gain of 50,000 units or so, an important contribution to the 1949 housing record.

Currently, ENGINEERING NEWS-RECORD's reports on contract awards for mass housing—projects costing $250,000 a year or more—are running ahead of a year ago. That suggests that activity in mass housing will continue to run high well into next year. With the federal government's new public housing law coming into large-scale operation next year, an increasing proportion of this mass housing will be public work.

Operations under the Wagner-Ellender-Taft Act, passed five months ago, are moving slowly but surely ahead. By next spring the planners hope to have a few units actually under construction and by the end of 1950 they may have started as many as 100,000 units. That, of course, will insure high activity in this important section of the construction industry.

● THE BIG SHIFT in the geographical pattern of homebuilding hasn't been matched by a shift in contract awards for engineered construction. A look at Engineering News-Record's awards for the first ten months of 1949 shows them falling into just about the same pattern as they did in 1948. Since 1939, however, there has been a major shift westward in the pattern of contract awards:

Engineering News-Record Contract Awards
(First 10 months)

	1939	1948	1949
New England	6%	4%	4%
Middle Atlantic	33	28	27
South	15	15	15
Mid West	18	12	13
West of Mississippi	18	26	26
Far West	10	15	15

As yet, however, we have no evidence that the wartime and postwar shift in heavy construction work has anything more than a speeding-up of the long continuing growth of the West. Certainly with the nation's needs for heavy construction work as great as they are, there's no reason to expect the geographical pattern of heavy construction to shift suddenly or sharply.

THE CONSTRUCTION WEEK

PIPELINE GO-AHEAD—Although, after two years, there's still some uncertainty on right-of-way, the Trans-Arabian Oil Co. has given the go-ahead to contractors on its proposed 1,040-mi. "Tapline" oil pipeline between Abquaiq on the Persian Gulf and Sidon, Lebanon (on the Mediterranean coast). Involved in a complicated mesh of middle-eastern politics and racial feelings since its inception, the pipeline was originally expected to cost about $125 million. Delays, several minor wars, difficulties over steel supplies will push the cost considerably higher now. General contract for the pipeline construction went to Williams Bros. Co., Tulsa, Okla.; and Graver Construction Co., N. Y. City, and the Chicago Bridge and Iron Co., were given pieces of the work (station construction).

SMOG STUDY—On the heels of its own Bureau of Industrial Hygiene's report on the Donora smog deaths of more than a year ago, the Pennsylvania Department of Health is starting an intensive program for study of air pollution. A mobile field laboratory—now under construction—will be the department's principal weapon. The report on Donora, following one submitted more than a month ago by the U. S. Public Health Service (ENR Oct. 20, p. 17) blamed the deaths of 19 persons on unusual weather conditions, combined with fumes that were emitted by factory chimneys over the town.

BUSINESS PROSPECTS GOOD — Government sources think construction's prospects for 1950 are as good as in 1949—in other words, about a $19 billion year. A joint prediction by the Office of Domestic Commerce of the Department of Commerce, and the Bureau of Labor Statistics forecasts: Private building will drop seven percent to $13.1 billion; public construction will go up 18 percent, to $6.1 billion.

FOR SALE?—The California Farm Bureau Federation (60,000 members) heard recommendations from a highly-placed state official that the state take over the $440-million Central Valley project from the Bureau of Reclamation for state operation. Stemming from charges that Reclamation wants to control the state's main water resources, the proposal came from Rolland Vandegrift, state legislative auditor. He suggested the state could pay for the project by: A bond issue; an RFC loan; taking over individual portions as they are completed, and paying for them piecemeal. Whether or not Reclamation would sell, he did not say.

DEVALUATION NOTE—Since devaluation of the pound, there is a cost advantage in favor of British construction machinery—an advantage at least one U. S. manufacturer finds somewhat alarming in view of his struggles to maintain his export markets. The British government is less willing now than formerly to grant permission for royalty arrangements payable in dollars; in fact won't allow them at all if equivalent products are already being manufactured within Great Britain. Until devaluation, there was no particular difference in production cost—universally lower British labor rates being offset by poorer, lower production British equipment.

COMPROMISE—A $53,000,000 proposal for improved approaches for and minor alterations to the San Francisco-Oakland Bay Bridge is a necessary compromise in the political stalemate that now delays construction of a second bay crossing. By holding off a federal OK for a Yerba Buena Island right-of-way, and raising various side issues, proponents of a southern crossing have managed to obstruct action on the officially-preferred parallel bridge. So, the $53,000,000 proposition appears to have two advantages to taxpayers: (1) providing short-term relief for traffic congestion; (2) holding together an efficient now delays construction of a second bay crossing. engineering staff already gathered.

STRIKE OUTLOOK GOOD—The strike outlook for 1950—meaning the outlook for less strikes—is good, say Washington pundits. They point out that most contracts now being signed run for two years, and even clauses providing for reopening the contracts for wage discussions don't come up for a year. For comparison, government statisticians believe 1949 will be second only to 1946 in point of strike idleness—something like 55,000,000 man-days lost, more than half of that total in the last three months. (The 1949 total of man-days lost is about half the figure for 1946—but still more than enough to have caused economic dislocation.)

NEW DAMS MEAN HIGHER POWER COSTS—The wholesale power rate of $17.50 per kilowatt year now charged by the Bonneville Power Administration will continue another five years—but after that it will go up. Paul J. Raver, administrator, said that higher construction costs for the eight power dams to be added during the next five years (McNary, Hungry Horse, Albeni Falls, Roza, Chandler, Detroit, Big Cliff and Hills Creeks) won't be felt until about 1954.

Living Building Codes

BUILDING CODES should be growing, living things. Technology continually advances and improves. Codes should change to keep pace.

The work done by a committee of San Francisco engineers on lateral force code provisions (see page 28) is a part of this growing. The committee was able to develop a dynamic approach to seismic forces because more is known about earthquakes now than was known 10 or 20 years ago. A similar committee 10 or 20 years hence can likewise develop improved, more rational earthquake design requirements. Most of our present trouble with antiquated building codes stems from disregard of this fundamental tenet of code administration —constant study and progressive revision.

Much credit is due the San Francisco group for freely devoting time and effort to keep building code requirements up to date. It is hoped that code bodies will study carefully the proposals made. Only by taking advantage of all such work can building codes be made as progressive as the engineering science they are supposed to reflect.

Water Meters New York's Way Out?

WITH rainfall 7.5 in. below normal, water consumption approaching 1,200 mgd., and new supply projects not scheduled to start producing until late 1950, New York City faces the bleak possibility of having to apply severe restrictions on the individual use of water. So far, only city departments have been ordered to cut down on water use. Appeals to the public to practice water conservation have produced disappointing results—a drop of only 40 mgd. And this is attributed in great part to seasonal decline.

One avenue of temporary escape from this dilemma seems to be open. Leakage from faulty plumbing facilities and careless wastage is estimated to be as high as 200 mgd. This loss results with only 0.9 percent of domestic consumption metered, and with total metered consumption of only 26.5 percent, most of which is business and industrial consumers. It seems logical, therefore, that a large portion of the waste could be prevented if meters were installed throughout the distribution system.

When installation of water meters is considered by city managements, the threat of political reprisal rears its ugly head. Consumers would protest strongly, on first thought, if installation of meters were made mandatory. But, on further analysis, their fears could be dispelled. They could be made to understand that savings in water bills would pay for their meters in a reasonable length of time. This would be true in New York. Rates are reported to be low enough so that water bills would be reduced when metered consumption replaces the frontage system of charging.

The claim may be made that the only effect of complete metering would be to decrease water income. This might be one result that would eventually call for higher rates. But it is also a fact that consumers will repair and replace faulty plumbing facilities when they know that they are paying for their own waste.

It doesn't seem reasonable—even in the face of political disfavor, which is temporary at the most—that a great city like New York should continue to permit wastage of 200 mgd. of precious water. And, in greater or less degree, the same can be said of many other cities that dismiss metering as impracticable.

The Second Mile

SEVERAL YEARS AGO, the late William E. Wickenden, then president of Case School of Applied Science, taking as his text the well-known quotation from the Sermon on the Mount, "Whosoever shall compel thee to go one mile—go with him twain," made a statement concerning the professional approach to engineering work that can hardly be repeated too often.

"Every calling has its mile of compulsion, its daily round of tasks and duties, its standard of honest craftsmanship, its code of man-to-man relations, which one must cover if he is to survive. Beyond that lies the mile of voluntary effort, where men strive for excellence, give unrequited service to the common good, and seek to invest their work with a wide and enduring significance. It is only in this second mile that a calling may attain to the dignity and distinction of a profession."

Too often emphasis is placed on the superficial trappings of a professional status when the real concern should be with this "second mile," and whether our footprints are there. For example, are we doing everything possible to raise the standards of honesty and fairness in the business of engineering and construction? Are we devoting time to community and governmental problems beyond those affecting our immediate business?

Professional status, said Dean Wickenden, "is an implied contract to serve society, over and beyond all specific duty to client or employer, in consideration of the privileges and protection society extends to the profession."

For those who would seek to do their part in fulfilling that implied contract we recommend a reading or rereading of "The Second Mile," which has just been republished by the Engineers Council for Professional Development (ENR Oct. 6, p. 37). It is remarkable for both its comon sense and inspirational quality.

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ENGINEERING NEWS-RECORD

DECEMBER 1, 1949 VOL. 143 NO. 22

State highway leaders seek doubled U. S. program

Call for federal spending at $810 million a year and increased federal participation in fund-matching program on interstate highway network—Point out states' difficulties

State highway officials meeting in Chicago last week united on a recommendation that Congress at its next session step up federal-aid authorizations to $810 million a year from the present $450 million. As a new feature, their platform proposes that $210 million of the annual appropriation go to the 40,000-mile interstate system on a 75-25 federal-state matching basis. For other federal-aid roads, they recommend retaining the present 50-50 matching ratio.

Agreement on all points of the federal-aid problem came at the close of a spirited meeting of officials of the American Association of State Highway Officials. Chief administrative officers of some 45 member departments argued the issues throughout the day. By roll-call ballots at an evening session, they approved item-by-item the recommendations they would make to Congress. Day-long debate produced a united front.

Before congressional committees at the session starting in January, the AASHO will support authorizations of federal-aid funds on an annual basis to four road systems: interstate, $210 million; primary, $270 million; secondary, $180 million; and urban, $150 million. Funds for the primary, secondary, and urban classifications—the association will maintain—should be allocated to the states and matched with state money on the same basis as is now in effect.

For the interstate system funds, however, the AASHO will propose new formulas both for apportioning the money and for matching it. The state highway officials recommend that the interstate funds be allocated to the states on a basis of population alone—with this proviso: that no state receive less than three-quarters of one percent of the annual authorization. As to matching, they want the federal government to put up $3 to each dollar paid by the states.

More than $11 billion—at 1948 prices—has to be spent on the interstate network to bring that system up to adequate standards for today's traffic, as the Bureau of Public Roads pointed out in a recent report to Congress on "Highway Needs for the National Defense." The officials gathered at Chicago felt that they could not persuade the citizens of their states to approve spending the large sums of state money required—on a 50-50 basis—for building up the limited mileage of the interstate system. That was their chief reason for proposing a new ratio of construction expenditures on the high-priority national network.

As a further incentive to speedy improvement of the interstate system, the highway officials approved another recommendation to Congress. Some states would like to hasten construction of their interstate roads by borrowing money for the purpose. The AASHO proposes that these states be encouraged to go ahead. It will urge Congress to write into the 1950 highway act a provision that a state may use its future interstate funds to pay the principal—not the interest—of general obligation bonds issued to expedite work on the interstate system.

A state that went ahead on this basis would be acting largely on faith. It would have to rely on Congress to make the later annual appropriations needed to retire the state's indebtedness for interstate improvements.

Federal aid for local roads did not come up at the Chicago meeting. The officials recognized the rural problem by recommending that the yearly authorization for the secondary system be raised to $180 million from the present $135 million. Urban needs got similar recognition, with a proposed increase to $150 million from $112.5 million.

The largest increase was recommended for the primary system, which includes the interstate network. In addition to the $210 million proposed for interstate roads, the state highway officials want the authorization for the rest of the primary system stepped up to $270 million—an increase of nearly $70 million.

AASHO approval of special funds and a changed matching ratio for interstate roads put great weight behind these proposals. Other organizations are opposed to any departure from the 50-50 matching basis, but the American Automobile Association has conceded that the federal government could well pay two-thirds of the construction costs on the interstate system (ENR, Nov. 17, p. 25).

Jelley to Head Navy's Civil Engineers

President Harry S. Truman announced this week the appointment of Capt. Joseph F. Jelley, Jr., as chief of the Navy's Bureau of Yards and Docks. He replaces Rear Admiral John J. Manning, who will retire.

Adm. Manning, who will have completed a four-year tour in the office since his appointment Dec. 1, 1945 (ENR Nov. 15, 1945, p. 71), will become executive vice president of John McShain, Inc., Philadelphia.

Jelley automatically will resume his wartime rank of rear admiral, since that rank accompanies the assignment. His new deputy chief will be Capt. Archibald D. Hunter.

Adm. Jelley, 45, is a Pennsylvanian who in 1946 became the youngest rear admiral on active duty in the Navy, at 42. At that point, he was chief of civil engineers. He was appointed to the Navy's civil engineer corps as an ensign in 1927. His service includes duty in Hawaii and many naval stations in the United States. He was officer in charge of construction at the Naval Air Station, Alameda, Cal., in 1941 and at San Pedro, Cal., in 1942. Other top assignments included that as executive officer of the Fifth Naval Construction Brigade and assistant and deputy chief of the Bureau of Yards and Docks. A graduate of the Naval Academy, he did engineering work at Cornell University and Rensselear Polytechnic Institute.

Capt. Hunter, a native of Massachusetts, was educated at Worcester Polytechnic Institute, the Naval Academy and RPI. After service as assistant public works officer at Bremerton, Wash., New York and Pearl Harbor

(Continued on page 16)

NEWS BRIEFS

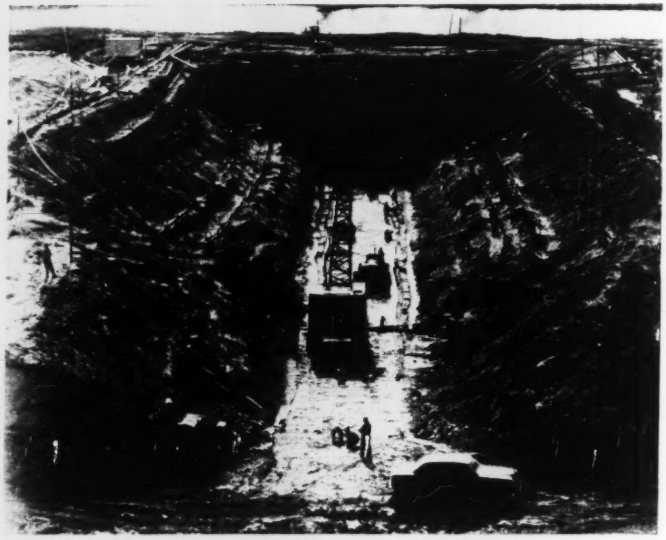
Dead Dams—Army Engineers are recommending against construction of Doniphan and Blair Creek dams on southeast Missouri's Current River, according to Engineer Chief Lewis A. Pick. The decision followed strong local opposition from sportsmen, conservationists and people who value the scenic and recreational properties of the valley.

Load Limits Levelled?—Highway officials from 12 states are to meet next week (Dec. 5-6) at Columbus, O., to attempt agreement on uniform truck weight recommendations. States to be represented are Wisconsin, Illinois, Indiana, Michigan, Kentucky, West Virginia, Pennsylvania, New Jersey, Maryland, Delaware, New York and Ohio. In addition to load limits, they'll discuss existing law and enforcement facilities, highway construction and maintenance, the vehicle registration, taxes and reciprocity.

Baltimore Seeks Relief—A "master plan" for traffic relief in and around Baltimore has been presented the city council by the city planning commission. Total cost over an indeterminate period is $194,538,000. It would provide an inner ring perimeter around the business district and three outer ring routes. Planners believe the inner ring would remove four of 10 autos from downtown streets, as well as speed traffic.

Columbia Basin Booming—With 5,000 men at work, construction is being pushed hard on the works which will let Grand Coulee Dam irrigate its first land in central Washington. Small dams, reservoirs, canals, tunnels, siphons and laterals will be needed before the first major block of new farm units can be opened in 1952. The Reclamation Bureau has $70,000,000 available this year for the project.

It'll be Some Job—Canada's Parliament will be asked to help finance a road connecting the dominion's Atlantic and Pacific coasts over an all-Canadian route. It's possible to drive the 4,195 mi. between Halifax and Vancouver now, but much of it is gravel road. One complication: There's considerable dispute among western Canadians as to which pass should be used through the Rockies. Calgary, Edmonton and southern Alberta groups all have competing candidates for the route.



DRY WELL—Working in the dry 41 ft. below the level of the Iowa River, contractors are preparing the way for Coralville Dam, a Corps of Engineers flood control project near Iowa City. Wellpoint headers are located at three levels, the lower ring wellpoints being spaced 5 to 6 ft. on centers and driven 12 ft. to subgrade. E. M. Dusenberg, Inc., Clear Lake, Iowa, is general contractor. (Moretrench Corp. photo.)

New Maryland Bypass—Controlled-access routes are the framework of a plan for a traffic bypass around Baltimore which was announced last week by the county planning commission. City and county officials are in complete agreement on the proposal to relieve "hardening of traffic arteries" in the metropolitan area.

Port Construction Coming Up—Leasing of 50 acres in Wilmington, N. C., shipyards to North Carolina's State Ports Authority by the U. S. Maritime Commission clears the way for a $5,250,000 development at Wilmington which is expected to start by March 1. The authority has another $2,250,000 to spend at Morehead City when necessary leases with the city have been arranged.

Up a Third in Two Years—Milwaukee County's postwar improvement program has increased in cost by about one-third in two years. Additions and cost increases are responsible for the $18,154,500 boost in the estimates of $54,967,000 which accompanied the original program.

Correction—There was an error on page 64 of issue Oct. 20. Frank H. Reynolds of Sacramento, Calif., is not city engineer of that city, but of Roseville. Sacramento's city engineer is Fred Klaus.

Missouri court to decide on gas tax referendum

A hearing on an appeal from the decision of Circuit Judge Sam C. Blair of Missouri in denying the injunction to enjoin a referendum on Governor Forrest Smith's 4-cent gasoline tax proposal will be conducted before the Missouri Supreme Court on Jan. 12. The injunction is sought by four officials of the Missouri Farmers' Association on the ground that the proposed legislation appropriates money for state institutions and cannot be referred to the people.

A decision was recently handed down by Judge Blair in the Cole County Circuit Court dismissing the MFA petition directed against Secretary of State Walter H. Toberman. The Supreme Court advanced the case and a final ruling is anticipated soon.

In the event that the referendum is upheld, Governor Smith said that he will call the legislature in special session early next year and ask it to set a date for a special election on his highway expansion program. If the assembly fails to act on the governor's request, the proposal will go on the ballots next fall.

Farmers, truckers, automobile clubs and other groups are opposed to the proposed increase of two cents a gallon in the gasoline tax.

Air Force receiving money for Alaska and Okinawa

More than half of the $48,834,770 appropriated for U. S. Air Force construction in Alaska and Okinawa will be used to help allevate a critical housing shortage. The balance of the funds will be used for construction of operational facilities.

About 130 family apartment units, costing $6,002,880, will be constructed at Eielson Air Force Base, Fairbanks, Alaska. In addition, bachelor officer quarters and barracks for enlisted men costing $6,526,500 will be constructed there. Construction of operational facilities in Alaska will cost $12,160,187.

At Kadena Air Force Base, Okinawa, about 425 family units will be built at a total cost of $8,833,075, and $7,439,190 will be spent for construction of bachelor officer quarters and barracks for enlisted men. Operational facilities at Okinawa will cost $7,872,938.

Construction in both Alaska and Okinawa will be done by private contractors receiving the contracts as a result of lump-sum bids. A total of $24,689,567 is available for Alaskan construction and $24,145,203 for construction in Okinawa.

The higher cost-per-unit for family apartments to be built in Alaska, as compared to the Okinawa dependent housing construction, is caused by the higher labor costs in Alaska; the necessity for thorough insulation and heating; and the greater cost of transporting the materials to Alaska. Also, the Alaskan housing will be of permanent-type construction while the Okinawa buildings will be minimum required to be typhoon resistant.

Most of the Okinawa buildings will be limited to one-story construction, and are tentatively planned to be made of concrete blocks manufactured locally. The concrete walls will be reinforced with steel.

The Alaska construction is planned to start early next spring and should be completed in slightly more than two years. Construction at Okinawa will begin as soon as possible.

Metal tape on feed wire causes electrocution

Nelson Carter, 21, an employe of the Kentucky highway department, was accidentally electrocuted Nov. 15 at Greensburg, Ky., while working with a road crew.

Witnesses said that Carter, a rodman, came in contact with a metal tape which had been thrown over a high-tension power line. He was a star college baseball player.

MOVING JOB—A thousand persons watched, Nov. 20, as contractors slipped this 167-ft. bridge sidewise into position to replace a two-track temporary bridge on the Pennsylvania Railroad main line at Iselin, N. J. Rail traffic travelled over an adjacent temporary bridge during the 12-hour operation—10 hours to wreck the temporary bridge and 2 hours to slide and set the new structure and hook up the tracks. (Lower photo shows space into which new bridge went.) The new bridge will make possible an underpass for New Jersey's Route 4 parkway—a new road. Second half of the railroad bridge will be installed in a similar manner Dec. 4 (ENR staff photos)

Plan natural gas pipeline under Hudson River

Planning was being pushed forward last week for construction of a 26-in. dia. steel pipeline to carry natural gas under the Hudson River to serve metropolitan New York City.

Completion of the pipeline—scheduled for 1950—will bring natural gas to the city generally for the first time, although limited supplies were introduced in Staten Island (Richmond Borough) recently.

The under-river crossing will be a part of a $200 million, 1,840-mi. line to be built by Transcontinental Gas Pipe Line Co., between Mercedes, Texas, and New York. The crossing will be built from a point on the New Jersey Palisades opposite W. 132nd street, Manhattan, to connect with distribution facilities in the city. The city itself, and areas in Long Island, Westchester and northern New Jersey will be served.

The Ray Fish Engineering Co., of Houston, Tex. and Newark, N. J., is project engineer.

Alumni engineers build Rice Inst. stadium at cost

The new stadium at Rice Institute, Houston, Tex., will be built on a non-profit basis by Brown and Root, Inc., contractors, saving the institute upwards of $200,000.

The explanation is that George Brown of the firm is a member of the class of 1920 at Rice and since 1942 has been a member of the Rice board. With his brother Herman, he contributed the first $100,000 toward the $500,000 purchase price of the Rincon Oil properties, now worth more than $10,000,000 to the institute.

Mason Lockwood of Lockwood and Andrews is mechanical engineer on the project. He joins an all-Rice alumni staff in the designing and planning portion of the work. The structural engineer is Walter P. Moore. The architects are Milton McGinty and Lloyd and Morgan. Structural details are not yet announced.

It is expected that the stadium will be ready for use next fall when the football season opens Sept. 30.

Capt. Joseph F. Jelley

Rear Adm. John J. Manning

Capt. Archibald D. Hunter

NAVY CHANGES COMMAND—Incoming and outgoing chiefs of the Navy's Bureau of Yards and Docks, and the new deputy chief.

Jelley succeeds Manning as Yards and Docks chief

(*Continued from page 13*)

Navy yards, he became project manager for the Bureau of Yards and Docks in 1938. In 1942, he became assistant Public Works Officer, at which position he has continued to date.

Manning has been in the civil engineer corps since 1918. In 1945, he attained the permanent rank of rear admiral upon appointment as chief of the Bureau of Yards and Docks. During the last war, he held positions of top responsibility in the bureau and Seabee organization which was developed to handle world-wide construction of Navy shore facilities from December, 1941, until November, 1942, he directed the Bureau's Construction Division. From then until June 1945, he was director of the Atlantic Division. Then he became director of the Eastern Pacific Division, until he was made Bureau chief last year.

An RPI graduate, Adm. Manning attended the Naval Academy for a short time before his first assignment, at Guantanamo Bay, Cuba, thereafter, he served at Newport, Pearl Harbor and Philadelphia. From 1937 until 1941, he headed the Bureau's Fleet Facilities Division. His career was the subject of an article in ENGINEERING NEWS-RECORD for Dec. 7, 1944.

Adm. Manning was decorated during the last war for contributing "materially" to the success of the Allied invasion of France. He served during the planning of the attack, as special advisor to Adm. Harold R. Stark, who commanded U. S. naval forces in Europe during the invasion.

Approve $21 million Afghanistan loan

A $21,000,000 Export-Import Bank loan approved last week will be used to implement a program of irrigation and highway improvement in Afghanistan, to be supervised by U. S. engineers.

The loan, characterized by bank officials as "a point four project" will cover construction of a dam, a canal and irrigation system, and supplemental river development projects on the Helmand and Arghandab Rivers in southeastern Afghanistan, near the Indian border.

Included will be a storage dam on the Helmand River, probably of earthfill construction, known as Kajkai Dam, and canal facilities to irrigate a valley some 300 miles long. The canal system (known as the Boghra canal system) will be built piecemeal as credit permits.

Also included in the long-range project for the Asiatic country is a road system 170 miles long, to connect the Khyber Pass on the Indian border with the Afghanistan capital at Kabul.

The projects are based on the work of a U. S. engineering firm—Morrison-Knudsen Afghanistan, Inc., of New York City, which has been at work preparing preliminary plans for more than a year (ENR Feb. 26,1948,p.4). Some preliminary construction work (such as access roads to damsites) has been done, it was understood last week. M. K. Ludin, Afghanistan Minister of Public Works (who served with the U. S. Bureau of Reclamation in its Denver office from 1936 to 1938) directs the work for the government.

As originally planned, the project looked to the eventual development of about 200,000 kw. of electric power from the dams on the Helmand and Arghandab rivers, and on other streams to the north of the present authorized work. Extent of the work now to be done that might be used for power development could not be learned immediately.

Export-Import Bank officials said that the $21,000,000 loan will be made on a 15-year basis. The country's principal exportable resources are karakul skins (for clothing), but mineral resources are known to exist although they have never been adequately surveyed.

Toll-free Seattle bridge carries doubled traffic

A 50 per cent traffic increase on the Lake Washington floating bridge at Seattle, Wash., for this fall as compared to a year ago is largely due to the removal of tolls, according to W. A. Bugge, state highway director.

The 24-hour traffic total averaged 15,570 this fall, compared to 10,110 in 1947 and 10,720 in 1948, when tolls were being collected. The increase was even greater over the bridge which connects the island with Seattle. Here the average count was 15,940, as compared to 8,780 in 1947. This includes traffic between Mercer Island and an east shore shopping section.

Push $60-million King's River projects

Construction will start as "soon as possible"—sometime next year—on the $60,000,000 Kings River hydro development in central California, authorized recently for development by Pacific Gas & Electric Co. (ENR Nov. 24, p. 17).

Engineering plans and designs are being hurried to completion, but construction activities in the high Sierra cannot begin before next spring.

The Federal Power Commission favored PG&E's application over preliminary suits of the Bureau of Reclamation, which wanted to include the river in its Central Valley Project, and of the Kings River Water Association.

PG&E's project will include three new hydro plants and the enlargement of a fourth for the development of about 275,000 kw. in new capacity, and three new dams, two of them rock-fill.

The rock fill dams are a departure from past practice in California in high altitude dams. Utilities have favored thin slab dams because of the cost of hauling materials into the mountains. However, frost action in the thin slab dams has caused a considerable maintenance problem.

PG&E had not built a rock fill dam since the completion in 1932 of Salt Springs Dam, 350 ft. high and the largest rock fill in the United States. Salt Springs has been highly satisfactory in operation, and the utility now plans to go to rock fill dams for all high altitude work.

Bear River Dam work

The work fill pattern will be followed also in the Bear River Dam on the upper Mokelumne, which will go under construction early next spring.

The rock fills—Helms Dam, 290 ft. high, with a 940-ft. crest, storing 102,500 acre ft., and Wishon Dam, 260 ft. high, with a 3,760-ft. crest, storing 128,300 acre ft.—will be faced with a reinforced concrete layer varying from 2 to 4 ft. thick. In general the concrete membrane will be built in 60-ft. panels with 2½-in. open joints around the panels that involve double copper water seals.

The third dam, at Haas diversion reservoir, will be a concrete arch structure 60 ft. high. Balch afterbay dam will be raised 32 ft. to a height of 158 ft.

The highest dam, Helms, will be at an elevation of about 8,000 ft. The four hydro plants will stair-step down the Helms Creek to the north fork of the Kings River. One of the new plants, Haas, will have a head of 2,230 ft. The existing Balch plant has a head of 2,336 ft., one of the five highest in the country. Lowest plant on the system will discharge directly into Pine Flat reservoir, now under construction by the Corps of Engineers.

PERSPECTIVE . . .

Plan for the Ohio

With a series of hearings and one job-letting coming up in the near future, the Army Engineers are getting well started on a plan to maintain navigation on the Ohio River for the next fifty years.

They are studying the specifications for a minimum 12-ft. channel (to replace the present 9-ft. depth) under a program that calls for ultimate replacement of the present "moving stairway" of 46 locks and dams, with a new system of 17 higher-lift, longer-pool structures. The new locks would be doubled in length to accommodate tows up to 1,200 ft. long.

First step was a hearing held on November 29 at Huntington, W. Va., on a project for a new single dam in the vicinity of Greenup, Ky. This new dam would eliminate dams 27, 28, 29 and 30 on the Ohio, and dam No. 1 on the tributary Big Sandy River.

A second step will be hearings, scheduled for Cincinnati, Dec. 1, to consider replacements for lock and dam 37 (Fernbank) to eliminate dams 33, 34, 35 and 36.

Construction is already under way on two new and larger locks and dams on the coal-heavy Monongahela River (which combines with the Allegheny to form the Ohio at Pittsburgh). A new main lock at No. 2— the initial lock on the Monongahela system—will be 110 x 720 ft., and will have an auxiliary chamber 56 x 360 ft. It will replace present twin locks which are 56 x 362 ft. At Morgantown, W. Va., a new lock will accommodate tows 84 x 600 ft.

Additionally, bids will be taken in December by the Nashville district engineer office on construction of the new Cheatham Lock and Dam on the Cumberland River. This structure will replace Locks and Dams A and No. 1, and create a pool 72 miles long for Nashville.

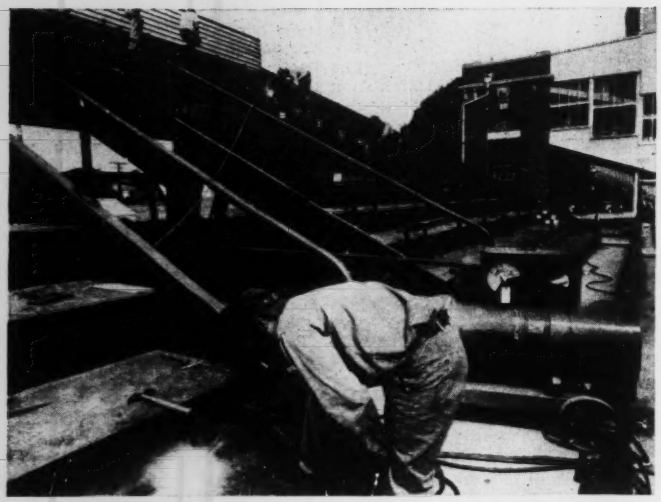
Reason for study

This 12-ft. channel study is under way now because of recent trends in towboat and barge design and construction, and a gradually rising tonnage curve over the years. For instance, in 1948 the Ohio carried a record of 42,792,487 tons of coal, coke, iron, steel, petroleum products and chemicals. There is also the rapid "aging" of the dams, particularly those near the end of their 40- to 50-year economic life.

Significant, also, is that the replacement program is developing coincident with attention being given to the 20th anniversary of the completion of the original lock and dam system on the 981-mile Ohio River. It was just 20 years ago, on October 22, that President Herbert Hoover delivered the principal address marking this event.

The newly proposed dams are designed to assure highly stabilized pools, in which shipping would be safe from the danger (as at present) of having the "bottom drop out" of navigable water. The river depth at Cincinnati, under the new system, would be about 35 ft., or 23 ft. above present pool stage, although 17 ft. below flood stage at that point. As an example of how this would work, the depth in the Pittsburgh harbor rarely fluctuates more than mere tenths from the 16.5 ft., since completion of "high-lift" dams in that area.

All the new structures being planned are designed for adoption into the 12-ft main stream, should that eventually be found necessary. Army Engineers feel that the present 9-ft. channel—adequate for the largest boats or tows of an earlier day—must now be deepened to accommodate craft of the future. The low, squat, square-nosed diesel towboats, carrying two or three times the power of the old sternwheelers, can push twice as much cargo in barges nearly twice as fast as the old steamers could. River men have felt that an extra 3 ft. of channel under the keel, and locks long enough to pass a string of barges in a single operation, will mean greater ease and speed of transportation.



TWO STADIA IN ONE—University of Michigan superimposed a new stadium larger than many colleges can boast atop its 76,000-seat bowl this fall. The job was completed in time to let 21,000 more persons see Michigan tie for the Big Ten football title last week. Steel plates ¼-in. thick were formed into single-step sections, then shop-welded into four-step units. These units in turn were welded together in the stadium. The 15-ft. sections are welded to adjoining sections laterally and vertically, and are supported by steel columns. The job was possible because of a wide promenade atop the original concrete and steel stadium. The Osborn Co., Cleveland, handled the design. Henry de Koning Co., Ann Arbor, was general contractor. Whitehead & Kales, Detroit, furnished and erected the steel. With 97,000 seats, it's now the largest university-owned stadium in the world. (Lincoln Electric Co. photo.)

Industries fight Niagara pollution

Five industries whose oily and acid wastes pollute the Buffalo River tributary of the Niagara River, have already spent considerable sums and are prepared to spend $5,500,000 more to remedy conditions, the International Joint Commission was told in Buffalo last week.

The American-Canadian body, which has been charged with the job of cleaning up boundary waters, held a two-day session to determine what Great Lakes area industries have done toward the main objective.

The chairman of the American section of the commission is A. O. Stanley, former U. S. Senator and former governor of Kentucky. The chairman of the Canadian section is J. Allison Glen, former speaker of the Canadian Parliament. Other members present were Roger B. McWhorter of Washington, George Spence of Regina, Sask., and Louis E. Warrick, U. S. chairman of the International Board of Technical Advisers, which conducted a local investigation.

Howard J. Brown, Buffalo Sewer Authority research chemist, described the main problem in the Buffalo River as occurring during dry spells, when the stream harbors a large slug of pollution, the result of industrial wastes from adjacent plants and some sanitary sewage from the bordering towns.

"In dry weather this pollution has no flow," he said. "With winds and high precipitation it goes out as a slug."

He drew a picture of cooperation between the plants and the Buffalo Sewer Authority, stating that the five —which he named as Socony-Vacuum Oil Co., General Division and National Aniline Division, both of Allied Chemical & Dye Corp., Republic Steel Corp. and Donner-Hanna Coke Corp. —had installed treatment process changes at enormous costs. He added that they are somewhat handicapped because of insufficient land.

He said the industries had agreed to a Buffalo Sewer Authority project to bring in water from Lake Erie for cooling in the plants, then discharge it into Buffalo River to move out the heavy slug. The $5,500,000 cost would be financed by selling the water to the industries on an amortization plan over 20 years.

NLRB orders an election for two highway workers

National Labor Relations Board has directed that an election be held to determine bargaining rights for two automotive mechanics employed by a California highway builder.

With two of three members who approved the order opposed to it, NLRB ordered the election to determine whether the two employes of Brown-Ely Co. should be represented by the International Association of Machinists or the Operating Engineers' unions. Brown-Ely did $225,000 worth of highway work last year, in California, bought $60,000 worth of equipment in interstate commerce.

Board members who supported the order, although personally opposed to it, felt they were bound by NLRB's precedent in a recent case which opened the way for the board to take jurisdiction over employes of road-builders (ENR, Nov. 3, p. 15). A more recent development (ENR, Nov. 24, p. 25) indicated NLRB wanted to limit its participation in such cases.

In two other decisions last week, NLRB:

Refused to intervene in a secondary boycott case affecting construction of a public school. NLRB took the position that a board of education is a "political subdivision" not subject to Taft-Hartley.

Dismissed an electrical contractor's suit against the International Brotherhood of Electrical Workers, AFL, as being too trifling to bother with.

Army to ask complete bid on Mississippi revetment

Early in January, Army Engineers will offer contractors for the first time the opportunity of bidding on construction of a complete Mississippi revetment project.

Practice has been that the Army either built revetments with government-owned equipment and hired labor, or awarded separate contracts for upper bank and underwater paving.

However, Col. Louis H. Foote, district engineer at Memphis, said that contractors will be invited to bid on building complete a total of 8¼ miles of revetments between Cairo, Ill. and Caruthersville, Mo. Call for bids will be issued on or about Jan. 17. Opening date will be near the end of February.

The project will include 2,395,000 cu. yd. of bank grading, 39,000 cu. yd. of gravel, 131,800 squares (100 sq. ft.) of articulated concrete mattress, and 124,400 tons of riprap stone upper bank paving.

Plans for bridging Puget Sound are outlined in engineer's report

Charles E. Andrew suggests a floating bridge with 400-ft. draw span —Underwater tubes alternate plan

A report by Charles E. Andrew, consulting engineer for the Washington State Toll Bridge Authority, on proposed methods of bridging Puget Sound west of Seattle has been made public by William A. Bugge, Washington highway director.

The report was ordered several years ago because of transportation difficulties arising from private operation of ferries. Increased ferry rates have stunted development of the area across the sound from Seattle and led to a demand that the state either take over ferries or replace them with bridges.

Proponents of bridges construction plans point out that while ferry tolls must continue to rise, bridges achieve a fixed cost that eventually is amortized and end on a toll-free basis. Andrew's report indicates that ferries would have to be operated for about six years while the bridges are being planned, financed and built.

The most feasible method of spanning the sound, Andrew believes, would be by a floating bridge from a point just south of Seattle due west to Vashon Island. Such a bridge would have a 400-ft. draw span in the center to allow for ship passage. Needed also would be a suspension bridge across West Pass from Vashon Island to the mainland at a point near Harper. The suspension bridge would have a center span of 3,300 ft. with 200-ft. clearance. The floating bridge would cost an estimated $17,250,000, the suspension bridge $22,000,000.

More than a year ago, (ENR Sept. 23, 1948, p. 1) Mr. Andrews told an ASCE convention about the possibility of a "floating" tunnel across Puget Sound, but nothing has been heard of it since.

An alternate plan

An alternate plan calls for underwater tubes 13,600 ft. long from Alki Point in Seattle to Bainbridge Island, a little to the north of Vashon. This would cost more, however, (an estimated $48,000,000) and involve unproved engineering principles in that the tubes would be suspended at a depth of 50 ft. under mean low water. Traffic potentiality also is greater on the Vashon Island route, and maintenance costs would be lower for the bridges than for the tubes.

Either plan would call for a $5,700,000 bridge over Rich Passage on the west side of Bainbridge and some $2,000,000 to be spent on connecting highways.

If either project were built, "the cost of public transportation would be less than half that of ferry transportation over the first 35 years and thereafter only a fraction thereof," Andrew declares. One difficulty facing either project would be the necessity of obtaining the approval of the Department of Defense, as navigable channels are involved.

Population of the area across the Sound from Seattle "could be expected to double within a few years after completion of the bridges," Andrew believes. Property-valuation increases alone would be greater than the cost of the bridges, he says.

Because of the long and relatively narrow area which Seattle occupies between Puget Sound and Lake Washington, the city has expanded residentially to the north more than 15 mi. from the business section and industrially to the south.

"The bridge project to the west would not only afford Seattle room for future expansion which it will need, but also would develop a territory of 2,500 sq. mi. with a large volume of business to Seattle." Andrew's report sets forth. "Such a development can never occur with ferry service as the only means of transportation."

If the project is to go forward, the state legislature, meeting again in 1951 unless a special session should be called earlier, would have to appropriate $350,000 to $400,000 for a proper investigation, including plans and estimates, soundings and borings. Gov. Arthur B. Langlie has asked Mr. Bugge to investigate the possibility of federal help on surveys, and has told Mr. Andrew to proceed with his studies.

Let engineering contract for Queens-Welfare Bridge

Planning to eliminate a serious traffic bottleneck on the Queensboro Bridge—connecting Manhattan and Queens boroughs, New York City last week awarded contracts for engineering work on a new structure across one arm of the East River.

The new bridge, to cost more than $4,000,000, will connect Queens, on the east bank of the East River, with Welfare Island, site of the city hospitals. The island's only present connection with either Manhattan or Queens is through a vehicle elevator which is reached by means of the Queensboro Bridge. Whenever hospital traffic must use this elevator, it means that traffic on the five-lane bridge structure is held up in both directions until the roadway is cleared of traffic.

The new bridge will be a lift structure, with a center span providing 400 ft. clear channel over the east arm of the river. The span will provide for the 45 ft. clearance in closed position and 135 ft. when open.

The City Board of Estimate approved a contract with Knappen, Tippetts, Abbett Engineering Co., New York consulting engineers, for preparation of preliminary and final plans for the structure. An original plan submitted by the city calls for a bascule bridge that would have provided 200 ft. of clear channel. This proposal was vetoed by Army Engineers.

Approve 3 sewage plants

Construction of sewage treatment plants and sewers in three Indiana cities, at an estimated cost of $11,000,000, has been approved by the Indiana Stream Pollution Board. Elkhart, South Bend and Mishawaka are the cities. The plants are to be built first, the sewers later.

Plan new Maryland road as Delaware bridge link

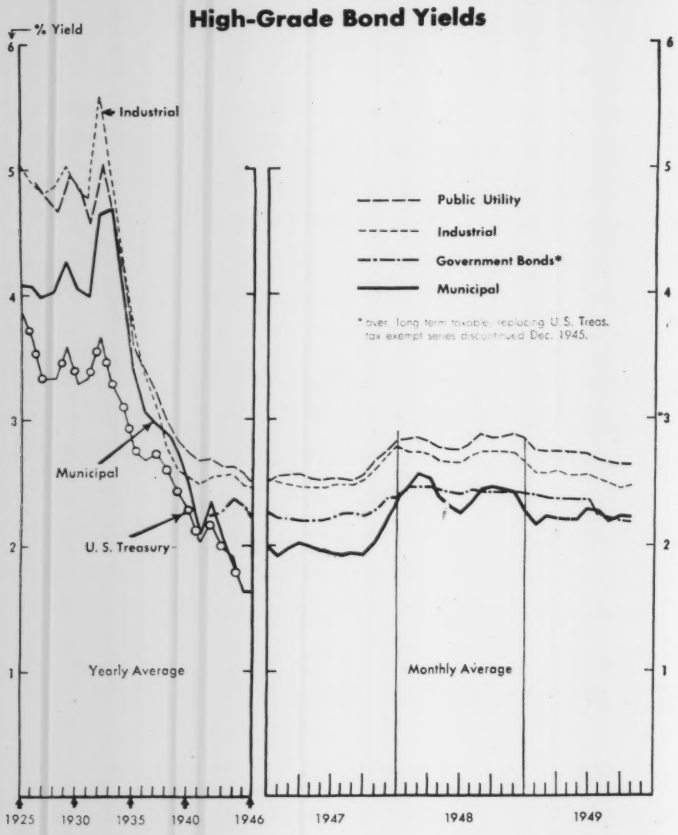
On Dec. 6 the Maryland State Roads Commission will open bids for a new arterial highway designed to provide direct connection between Delaware's new Memorial Bridge near New Castle and improved roads south of the site with Maryland's Chesapeake Bay Bridge now under construction at Sandy Point.

When completed, this project will help make it possible for motorists to travel between the north and south without being forced to drive through any major city between New York and Richmond, Va.

The first stretch of the new highway will consist of 9.2 miles dual-lane concrete from a point just east of Cox Creek, near Stevensville, to a point slightly east of Queenstown in Queen Annes County.

When completed the whole project will cost about $6,633,000.

CONSTRUCTION BUSINESS



Financing costs drop 8-10% in past year

Bonds to finance new construction are selling at yields 8 to 10 percent lower than last year. Public utility bond yields have dropped least, 8.2 percent, U. S. Treasury bonds most, 10.3 percent, then industrials, 10 percent. Municipal bond yields are down 9.8 percent and railroad bonds down 8.8 percent as reported by Standard & Poor's.

Current costs of construction money as measured by bond yields are only slightly above their 1947 lows. Average yields for high grade, long term securities in October ranged from 2.18 to 2.66 percent.

These 1949 rates are 41 to 50 percent below corresponding financing costs in 1926. In this same period construction costs have increased 91 to 131 percent, measured by ENGINEERING NEWS-RECORD cost indexes.

Bond Yields—Percent

	Oct. '49	Oct. 48	% chge.
Municipal	2.21	2.45	−9.8
Industrial	2.47	2.74	−10.0
Pub. Util.	2.635	2.87	−8.2
Railroad	2.66	2.92	−8.8
U. S. Treas. (taxable)	2.18	2.43	−10.3

Lumber market stronger

The lumber market reversed itself in the third quarter with increases in both production and shipments, and a September rise in wholesale prices, according to a report by the Lumber Survey Committee to the Secretary of Commerce. Richard A. Colgan Jr., chairman, says with continued good weather fourth quarter volume should exceed 1948 production and shipment figures.

Third quarter production of 8,244 million board ft. is 1.5 percent above the previous quarter, while shipments topped production by 5 percent, and new orders were 9 percent higher. Compared with the same quarter last year however, production fell short by 17½ percent.

Southern sawmills, whose operations have been severely hampered in recent months by heavy rains, now face a new stumbling-block in minimum wage legislation, the report states. The 75-cent floor for wages which takes effect in January is expected to force many mills out of business in the South, where labor is the major production cost item.

Plywood prices going up; production remains steady

Plywood prices have regained nearly a third of the 33 percent drop that came in the first half of 1949.

New Seattle base price for ⅜-inch special concrete form grade Fir plywood is $145 per M sq. ft., roughly 17 percent above the three-month low of $123.50 which lasted from July through September. Price at the beginning of the year was $188 per M sq. ft. On ¾-inch plywood the present quotation is $170, up 15½ percent from the mid-year low of $147. The peak for this size at the beginning of the year was $218 per M sq. ft. This is the third straight month of increased plywood costs.

Production of softwood plywood remained steady in September at 168,747 M sq. ft., according to the Department of Commerce, approximately the same as August output. Compared with a year earlier however, it lagged by 6 percent. Shipments and consumption were 169,832 M sq. ft., 2 percent below both August and September 1948 totals. Stocks of plywood at the end of September were relatively unchanged from the previous month's at 58,881 the Commerce Department "Facts for Industry" report shows.

Commercial loan rates lower in third quarter

Commercial loan rates receded slightly from their mid-year peak during the third quarter, reports the Federal Reserve Board. Rates dropped most in 7 Northern and Eastern cities, where a reduction of 0.22 lowered the cost of borrowing to 2.64 percent. In 11 Southern and Western cities commercial rates are down 0.1 point to 3.07, and in New York City they are off only 0.03 to 2.32 percent. Accompanying table shows rates a year ago.

Commercial Loan Rates (Cities)

Quarter	3rd 1949	2nd 1949	3rd 1948	% chge. in yr.
11 Southern & Western	3.07	3.17	3.01	+2
7 Northern & Eastern	2.64	2.86	2.66	−1½
New York City	2.32	2.35	2.32	..

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 52 went to press.)

Pine Flat Dam—U. S. Engineers, Sacramento, Calif., has awarded contract at $24,339,777, for constructing Pine Flat Dam, on Kings River, California, to Guy F. Atkinson Co., South San Francisco, Calif., Bressi-Bevanda Constructors, Inc., and Charles L. Harney, Inc., both San Francisco, Teichert & Son, Inc., Sacramento, and J. A. Jones Construction Co., Charlotte, N. C.

Ford Company Plants—Bryant & Detwiler Co., Detroit, Mich., has been awarded contract for metal stamping plant and office at Hamburg Twp., Buffalo, N. Y., by Ford Motor Co., Dearborn, Mich. The estimated cost of this contract is $1,250,000. Total cost of plant is $10,000,000. Ford Company also plans factory, power plant and railroad siding in Cincinnati, O., to cost $4,000,000.

Housing—Arthur G. Woods & Co., Windsor, Conn., plans constructing 500 single houses to cost $4,000,000 to $5,000,000 at Thompsonville, Conn.

Steam Plant and Lines—Central Electric Power Co-Operative, Linn., Mo., plans steam generating plant on Missouri River near Jefferson City and 465 miles transmission system. $11,350,000.

Military Housing—Nelse, Mortensen & Co., Inc., Seattle, Wash. will construct, manager and finance dwellings for enlisted men and officers at Moses Lake, Air Force Base, Wash., at $3,500,000. Stuart & Durham, Seattle, are architects.

Plate Glass Manufacturing Plant—Pilkington Brothers, Ltd., Toronto, Ont., will construct $3,000,000 glass manufacturing plant near Toronto.

Powerhouse and Switchyard—U. S. Engineers, Little Rock, Ark., will open bids January 17 for powerhouse and switchyard, Bull Shoals Dam Power Development, White River, Arkansas.

Water Supply and Sewers—City of Port Arthur, Tex., will vote December 10 to issue bonds for water supply and sewerage improvements. Estimated cost of projects is $5,400,000.

Hospital — Louisville Conference, Methodist Church, Louisville, Ky., plans hospital at Louisville, to cost $3,875,000. Nevin & Morgan, Louisville, are architects, E. R. Ronald & Associates, Louisville, Ky., are the engineers.

Stockhouse—W. W. Oeflein Co., Inc., Milwaukee, Wis., has been awarded contract for 10-story stockhouse addition in Milwaukee, for Miller Brewing Co., Milwaukee. Estimated cost is $2,000,000, with equipment. C. Oscar Janssen, St. Louis, Mo., is architect.

Bridge—Municipality of Edmonton, Edmonton, Alta., plans widening, strengthening high level bridge, to cost $1,250,000. J. C. Haddon, city engineer.

School—Waterford Township Schools, Waterford, Mich. will take bids December 14 for high school to cost $1,800,000. Frederick D. Madison, Royal Oak, is architect.

Housing—Monroe Housing Authority, Monroe, La. plans constructing housing $3,400,000.

General Hospital Authority—State of Pennsylvania, Harrisburg, plans hospital buildings at Mayview State Hospital, Mayview, Pa., to cost about $5,500,000. Palmgreen, Patterson & Fleming, Altenhof & Brown and Charles and Edward Stotz, all of Pittsburgh, are architects. A. F. Jones is chief engineer for owner.

Flood Protection Works—U. S. Engineers, Louisville, Ky., will take bids January 10, for flood protection works, Section B, at Covington, Ky. Estimated cost is $1,000,000.

School—Wise Contracting Co., Richmond, Va., has been awarded contract for Vacation Lane Junior High School at Arlington, Va., by Arlington County School Board, at $1,452,721.

Laboratory—U. S. Engineers, Albuquerque, N. M. wil lopen bids December 29, for laboratory at Albuquerque to cost $1,250,000.

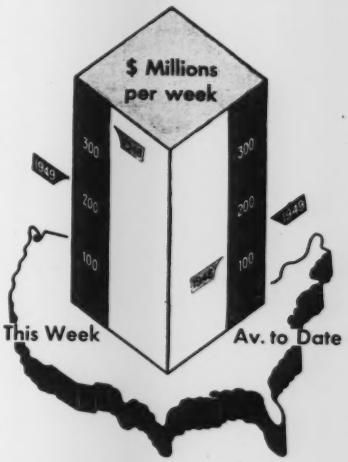
High School—District Commissioners, Washington, D. C., will take bids December 15, for Spingarn High School to cost $3,600,000. M. A. Coe is municipal architect.

Chemistry—Geology Building—Board of Regents, University of California, Los Angeles, Calif., will take bids January 3 for chemistry-geology building to cost $3,000,000. Gordon B. Kaufman and J. E. Stanton, Los Angeles, are architects.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Nov. '49	480.02	230.75
Building Cost	Nov. '49	352.77	190.70
Volume	Oct. '49	248	109



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Dec. 1 1949	Cumulative 1949 (48 wks.)	Cumulative 1948 (49 wks.)	% chge av.wk.
Federal	$50.4	$980.1	$890.9	+12
State & Mun.	53.7	2,936.1	2,483.8	+21
Total Public	$104.1	$3,916.2	$3,374.7	+18
Total Private	115.5	3,597.3	3,363.4	+9
U. S. Total	**$219.6**	**$7,513.5**	**$6,738.1**	**+14**

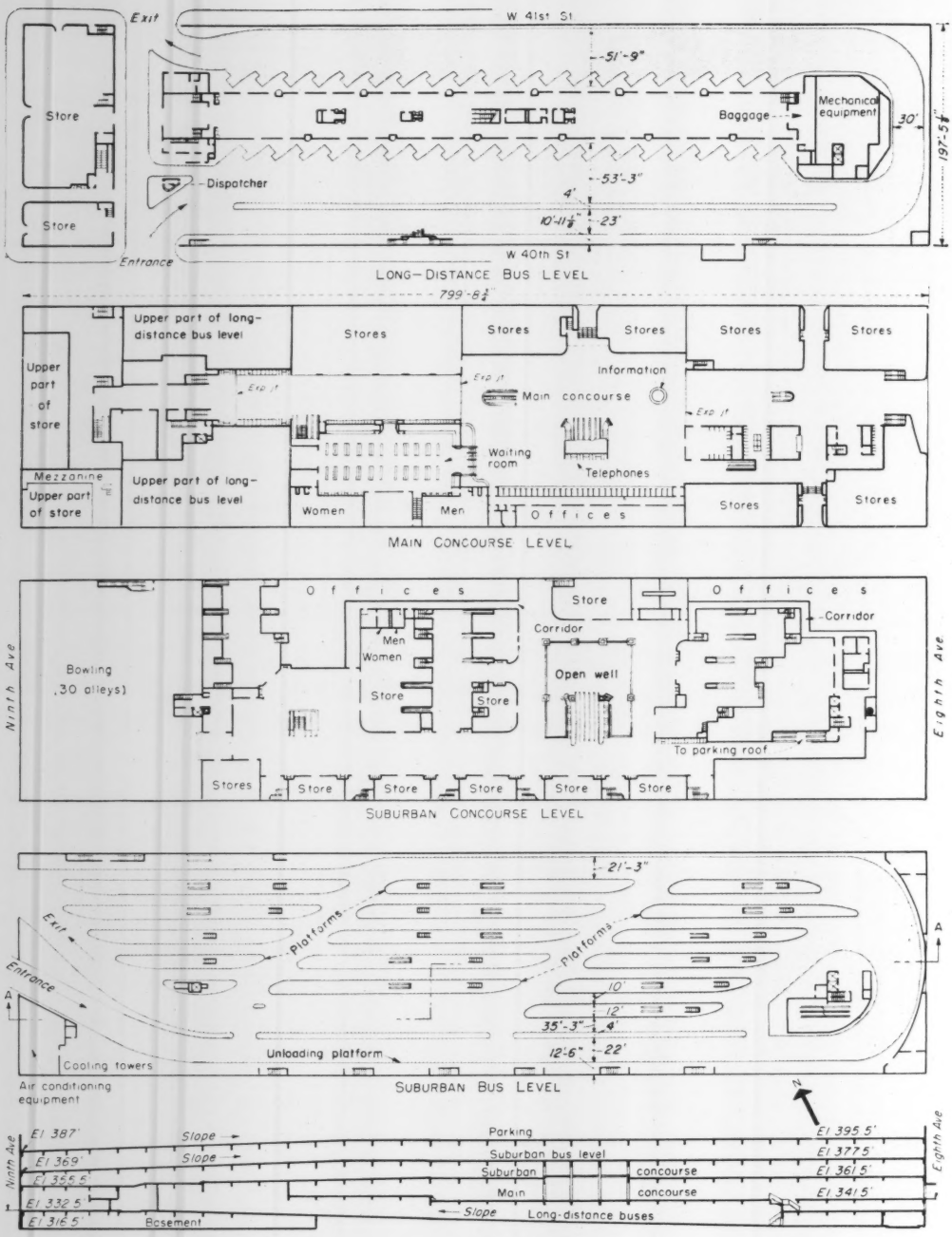
Contracts by type of work

	This Week	Cumulative 1949 (48 wks.)	Cumulative 1948 (49 wks.)	% chge av.wk.
Waterworks	$1.5	$190.4	$186.8	+4
Sewerage	5.0	262.8	215.7	+24
Bridges	6.5	336.0	277.0	+24
Highways	17.4	853.9	944.7	−8
Earthwork, Waterways	32.8	509.5	482.7	+8
Buildings,				
Public	32.2	1,477.9	1,061.3	+42
Industrial	26.1	910.5	1,022.8	−10
Commercial	68.2	2,204.3	1,747.2	+29
Unclassified	29.9	768.2	789.9	−1

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (48 wks.)	Cumulative 1948 (49 wks.)	% chge av.wk.
NON-FEDERAL	$5,266.7	$4,525.1	+19
Corporate Securities	2,083.0	2,194.5	−3
State and Municipal	2,798.7	1,838.3	+55
U. N. Building Loan	....	65.0	....
Federal-Aid Highway	385.0	427.3	−8
Federal	1,748.2	1,558.9	+15
Total Capital	**$7,014.9**	**$6,084.0**	**+18**



FLOOR PLANS of the principal levels. Vehicular traffic will enter and leave at the west end of the terminal.

On a site covering a whole New York City block will be erected . . .

A Terminal for 750 Buses per Hour

The world's largest bus terminal, now under construction in New York City, will benefit from the experience of the Port of New York Authority with its bridges and tunnels. Floor and roof construction will be similar to that used for bridges because of the heavy loads, and ventilation will be like that used for traffic tunnels.

All the structures on an entire city block had to be demolished to make way for the terminal. Excavation for foundations has been completed, 75,500 cu. yd. of earth, 10,885 cu. yd. of rubble and 30,800 cu. yd. of rock having been removed. (The rock is being used for riprap on the peripheral dike at La Guardia Airport.) Column footings have been cast, and concrete for the foundation walls is now being placed.

A great forward step toward breaking the traffic bottleneck in Manhattan, the $24,000,000 Union Terminal is expected to replace the numerous bus terminals scattered throughout the midtown area. More than 2,500 intercity buses per day will be taken from the city streets by using ramps that will connect the terminal with the Lincoln Tunnel to New Jersey (ENR Feb. 3, p. 52).

60,000 passengers a day

The building will handle 60,000 passenger arrivals per day and 750 bus arrivals per hour, plus an equal number of departures. It will also provide parking space for 450 automobiles on the roof.

Occupying the entire block from 40th to 41st St. between 8th and 9th Ave.—a few hundred feet east of the tunnel portals and directly across the street from Engineering News-Record's offices in the McGraw-Hill Building—the terminal will be 800 ft. long by 200 ft. wide. It will have four stories above grade at 9th Ave. (west end) but only three at 8th Ave. (east end). A basement, containing employee facilities and mechanical control rooms, will extend under the building for a distance of 275 ft. from 9th Ave. And a mezzanine below the street level, at 8th Ave., will provide access to a station on the New York City subway system. All floors will be served by three service elevators and numerous stationary and moving stairs, placed at heavy-traffic locations.

Two bus loading and unloading levels—the lower for long-distance buses, the upper for commuting buses—and two concourses on the floors between are planned.

The terminal will have a frame of structural steel incased in concrete or terra cotta, and brick exterior walls. Pedestrian loading was taken as 100 psf., and bus loading was assumed as 20 kips on two wheels spaced 6 ft. apart, plus 30 percent impact.

Wherever possible, columns will be located at 25-ft. intervals. Floor beams will be about 8 ft. apart and generally will span 25 ft. Because of the limited headroom, girders will be continuous over the columns and will vary in length from 50 to 190 ft. They will be seated on top of the columns of the story below and in turn will carry the columns of the story to be placed above.

The building will be divided into four parts by expansion joints. To avoid double columns, which would have occupied badly needed floor space, the steel beams will be supported at the expansion joints on sliding bearings on brackets.

Floors like bridge pavements

The terminal will be built of materials selected by the architects with a view toward minimizing maintenance.

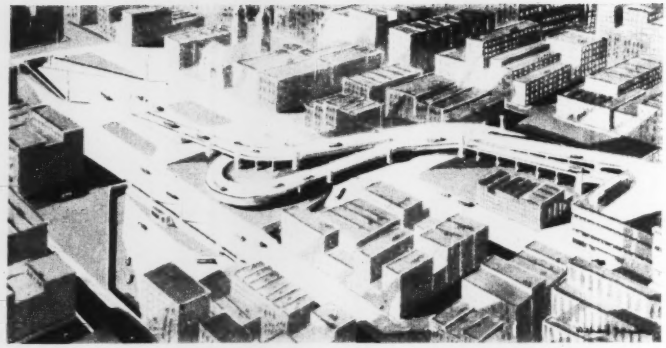
Floors in concourses will consist of a wire-mesh reinforced concrete slab of 4-in. minimum thickness, topped with 4 in. of lightweight concrete fill. They will be finished with 1½-in. of terrazzo, with non-slip integral aggregate. Suburban bus floors will be composed of a 7½-in. reinforced stone-concrete slab, ¾-in. asphalt planking and a 4-in. reinforced concrete pavement. Island platforms will have 1-ft. wide concrete curbs projecting 6 in. above the roadways and faced with 6 and 7-in. bulb angles. The space between the curbs will be filled with lightweight concrete with a 1½-in. screed finish. Over the basement, the bus floor will be a 7½-in. reinforced concrete slab, elsewhere an 8-in. slab on 7-in. gravel fill.

Roof construction

The roof will be the same as the suburban bus floor, except that 2-ply membrane waterproofing will be placed under the asphalt planking. It has been designed for future use as a bus loading and unloading level, with provisions for installing additional moving stairs.

Interior wall surfaces in the concourses will be of marble or glazed structural tile units. Show window trim, door trim and handrails will be of anodized aluminum. Suspended ceilings will be formed with acoustical metal-pan units, and lighting fixtures will be set flush.

The building will be protected against fire by sprinklers. A wet-pipe system will be used in inclosed areas, and a dry-pipe system in bus and other open areas.



RAMPS will connect New York's new bus terminal with the Lincoln Tunnel.

Long-haul buses enter at grade

Long-distance buses, which will constitute 15 percent of the terminal load, will enter and leave the building near 9th Ave. at street level. Upon arrival, they will proceed to one of the forty spaces around the perimeter of the island-type platform that are available for unloading and loading.

Passengers will have access to the long-distance bus level from upper floors by stairways and moving stairs. Travelers will also be able to enter this level directly from 9th Ave.

The long-distance bus roadway will slope downward toward 8th Ave., which is 8 ft. higher than 9th Ave. At the eastern end of the building, the floor will be 26 ft. below grade, and as a result, space will be available near 8th Ave. for the mezzanine leading to the subway station.

The bottom story will be ventilated by a positive-pressure system, similar to that used in traffic tunnels. Fresh air will enter through the bus entrances and exits and will be drawn into vents under the subway mezzanine at the opposite end of the building by fans located in a penthouse. The air will then be conducted through ducts to the roof exhaust.

Space on concourses will be rented

The main concourse will be on the floor above the long-distance buses. It will be at the level of 8th Ave. on the east and will have an entrance there, and on 40th and 41st St., as well. Its purpose is to distribute travelers to the suburban bus level, rooftop parking area and long-haul bus floor. To achieve this aim, 13 moving stairs will be available.

At this level will also be a waiting room, ticket booths, information booth, offices, restaurants and shops. Near 9th Ave., two 150-ft. long sections of the floor will be left open to provide headroom for buses at the entrance and exit in the story below.

The suburban concourse will be on the floor above and will be connected to the upper or suburban bus level by 14 moving stairs. Its purpose is to separate commuters into three major sorting areas in accordance with the island-type layout of the loading platforms on the suburban bus level above. Moving stairs to the roof will be at the southeast corner of this floor, isolating traffic to the roof from bus passengers.

Suburban concourse

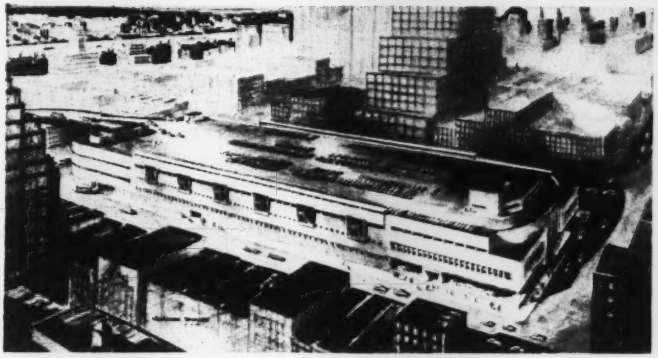
The suburban concourse will also be surrounded by shops and offices. In fact, as much concession space as possible will be developed in the building. The revenue thus obtained may amount to as much as 50 percent of the total annual cost of the terminal, and this saving will be passed on to the bus operators.

Concession space will be heated, and chilled-water for air conditioning will be provided at the option of the tenants. The air-conditioning equipment will be located at a 9th Ave. corner of the building on the suburban bus floor. All piping will be placed around the perimeter of the building.

Commuting bus floor

On the suburban bus level are 84 loading and unloading spaces. Passengers will enter buses from island platforms connected by both moving and stationary stairs to the concourse below. They will be discharged from entering buses onto a platform extending the length of the 40th St. side of the building.

This story will be ventilated by a forced-draft system. Fresh air will



UNION TERMINAL will be four stories high at west end (left), three at east.

enter through the bus entrance and exit and through continuous unglazed openings in both long sides of the building. Six fans at different points on the roof will then exhaust the air.

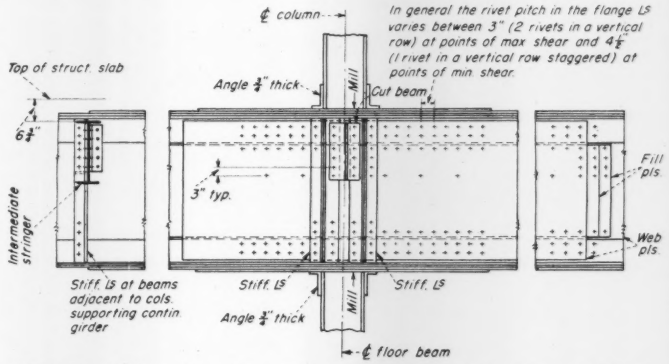
Ramps will have steep slope

Buses will enter and leave at the 9th Ave. end of the suburban bus level on the ramps leading to the Lincoln Tunnel. Laid out on maximum practical slopes, these ramps determined the elevation of the suburban bus floor at the west end of the building. To provide ample clearance (13 ft. for buses and a minimum of 10 ft. in the concourses), the suburban bus floor and the roof will be sloped upward for a distance of 283 ft. from 9th Ave. Also, the west end of the suburban concourse level will be a few feet lower than the rest of the floor, and the main concourse will end in a balcony 50 ft. from 9th Avenue.

A ramp will also lead to the roof parking area. It is expected that about 85 percent of the traffic entering the terminal will use the various ramps.

The Union Bus terminal was designed and is being built by the Port of New York Authority—an agency set up by the states of New York and New Jersey to develop the facilities and promote commerce of the port. This agency also operates the Lincoln and Holland tunnels; the George Washington and three Staten Island bridges; New York International, LaGuardia, Newark and Teterboro airports; and an inland freight terminal. Its marine facilities include Port Newark and grain elevators and piers in Brooklyn. In addition to the bus terminal, it has a union truck terminal in Manhattan and one under construction in Newark. John M. Kyle, Jr., is chief engineer.

To date, contracts have been let for excavation to the Howard Collins Construction Co. of New York City, $624,315; steel erection to Harris Structural Steel Co., $1,931,130; and foundation walls to Foss, Halloran-Nair, Inc., $117,000. Bids will be received in December for the main contract on the superstructure.


℄ column
In general the rivet pitch in the flange LS varies between 3" (2 rivets in a vertical row) at points of max. shear and 4½" (1 rivet in a vertical row staggered) at points of min. shear.
Top of struct. slab
Angle ¾" thick
Mill
Cut beam
6¾"
3" typ.
Intermediate stringer
Fill pls.
Web pls.
Stiff. LS at beams adjacent to cols. supporting contin. girder
Stiff. LS
Angle ¾" thick
Mill
Stiff. LS
℄ floor beam

GIRDERS will be made continuous over the columns to obtain adequate headroom.

City-County Unification Proposed for Cleveland

Cleveland is the most recent addition to the list of cities considering government streamlining by consolidation of city and county functions, according to the International City Managers' Association.

Part of a sweeping program of reforms proposed by the Cleveland Planning Commission, county-wide consolidation was pointed out to be the long-term solution to many civic ills. "Unification need not wait for adoption of county government," the commission said. "The unification of any appropriate services would be a step in the right direction."

Cleveland taxpayers are now furnishing the entire community with welfare institutions, airports, auditorium and stadium, lake-front development, zoo, freeway, rapid transit, sewers and sewage disposal, water supply and harbor developments. "This situation points up the need for operating many services on a county basis," the commission observed.

Most recent example of complete city-county integration was in Baton Rouge, La., in 1947. Under the charter approved by the voters in that year, the city and parish were joined under the government of a nine-man council. Services are provided to the entire parish area through unified department of public works, purchasing and finance.

Philadelphia was given the same boundaries as the county as early as 1854 and many of the county powers, including the power to lay and collect county taxes, was transferred to the city. Some years later, the Louisiana legislature partially combined the city and county government of New Orleans.

New York City has carried on many county activities for years, although the five counties originally comprising greater New York remain as districts for the administration of justice.

Radar for Mapping

Airborne radar equipment is now being used to make contour maps of the earth's surface, and reportedly is doing the job cheaper than ever before.

Richard C. Raymond, of Haller, Raymond and Brown, Inc., of State College, Pa., told the National Electronics Conference recently that electronic contour mapping would make contour maps at a speed "heretofore unparalleled."

SOUTH CAPITOL Street bridge crosses Anacostia River from main part of District of Columbia (top) to fast-growing area down left bank of Potomac (Wide World Photo).

Long Swing Span Shortens Washington D. C. Route

CURING one of Washington, D. C.'s latest growing pains has been accomplished by construction of the South Capital Street bridge, to be opened Dec. 13. The 3,250-ft. project includes the world's longest plate-girder swing span, 396 ft. between centers of rest piers. Maximum girder depth of 20 ft. takes the long-span loads, and dual electric motors with dual stand-bys and dual power sources assure uninterrupted service.

The new structure crosses the Anacostia river a short distance above its confluence with the Potomac (see map). The link will connect the city's central part with fast-growing residential areas down the left bank of the Potomac, and will provide a quick route to the Suitland Parkway, which goes eastward into Maryland. The nearest available crossing, a mile upstream, is the long-overcrowded Anacostia bridge, whose low-clearance bascule span must be opened for all but the smallest river craft.

Bridge approaches

The 64-ft. width of the new bridge will accommodate two 24-ft. roadways, two 6-ft. sidewalks, and a 4-ft. median strip. The Washington street approach to the new bridge begins at "O" St., where it ramps up to seventeen land spans. On the Anacostia side, the project drops to earth quickly, after crossing a riverside drive; there is one two-lane down-ramp and two two-lane up-ramps. Three 152-ft. spans make up each river-approach section. At the center of the 386-ft. space between approaches stands the swing pivot pier. Above low water it is circular in plan, 50-ft. dia., of concrete faced with granite. Below water, it is square with rounded corners, 62x 62 ft. Pier bottom elevation is —90 ft.

Longest plate-girder swing

Atop the pivot pier rides the long plate-girder swing span. Its length is 386 ft., providing two clear channel widths of 150 ft. Vertical clearance is 45 ft., 20.5 ft. higher than that of the Anacostia bridge. The particular reason for these large clearances is the presence of the U. S. Naval Gun Factory upstream. Large vessels must have access to that naval station.

The two swing girders vary in depth from 20 ft. at the center to 10 ft. at the ends. They carry on trussed floorbeams a roadway of 5-in. I-beam open grid construction, except immediately over the pivot pier where a 4½-in. I-beam grid is concrete-filled. The sidewalks and median strip are of 2-in. T-beam concrete-filled grid type.

The total dead weight that this construction brings to the pivot bearing is 2,617,000 lb. This bearing consists of two phosphor bronze pivot disks 3 ft. in dia. The upper disk has a convex spherical surface, radius 9 ft. 8½ in., which bears on the lower disk, which has a concave spherical surface, radius 10 ft. Balancing the 2,500,000-pound weight of the swing span on this 3-ft.-diam. pivot bearing is accomplished by six wrought steel wheels rolling on a 39-ft. dia. steel track on the pivot pier. Wheel reaction is 64 kips for a wind load of 15 lb. per sq.ft.

Mechanical equipment

Turning power comes from two main motors and two standby electric motors mounted on the swing. The two sets of motors have independent power sources—from Washington and Anacostia. Cables come under the approach bridge sidewalks to their respective rest piers, then go down through those piers to a depth of —40 ft., where they pass to the pivot pier in submarine trench, 15 ft. below the 25-ft. dredged channel. Each motor in a set operates through a 28:1 reduction gear to power a vertical-shafted rack pinion that acts on a 42-ft.-dia. circular rack gear on the pivot pier, just outside the balancing rail.

When the span is brought to the closed position, its ends, under full dead load at normal temperature, are 4 in. below the roadway grade. Electric-powered toggles at each end are then driven against shoes on the rest-piers to jack the span ends up to grade. This uplift creates a 92-kip positive reaction at each end of the span—one and one-half times the maximum negative live load reaction.

In the closed position, after the end toggles have been driven, two wedges

are driven at the center of the span, one on each side of the bridge near the edge of the pivot pier. Each wedge is driven between a shoe on the underside of the steelwork and a shoe on the top of the pivot pier, to create a wedge reaction of 500 kips. These two wedge reactions serve as live load anchors to relieve the pivot bearing loads and to stabilize the center bearing transversely.

Construction features

While the approaches on both sides presented problems in detailing and layout, their field construction was mostly straightforward. Principal interest from the construction standpoint lies in the river section foundations, and in the erection of the swing span.

River piers were set in depths varying from El. −43 (both ends) to −90 (pivot pier) by the open-dredged caisson method. Caissons were floated to place and sunk within pile guides, except for one end caisson which was sunk through a sand island.

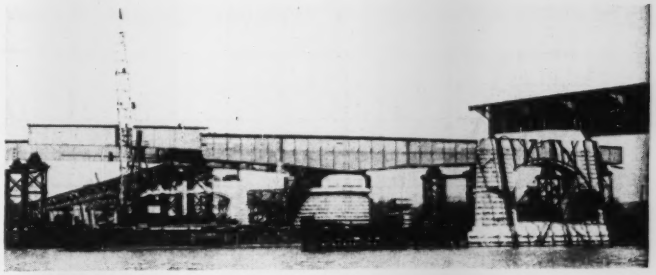
The pier caisson, largest of the group was 64 ft. square at the cutting edge and contained sixteen 13-ft. wells. Cutting edges were fabricated as steel floaters 16 ft. high on top of which splined 6x12 sheathing set vertically against an internal framework of steel bracing, formed the caisson wells. On the pivot pier, concrete outside dredging wells was carried up to −9 ft. mlw. before a distribution block was built extending up to mlw. Above mlw. the pier rises with circular walls braced internally by two reinforced concrete walls 90 deg. to each other.

One unusual construction feature is noted. In placing granite facing on the pivot pier, the substructure contractor took advantage of the pier's shape by devising a revolving scaffold. A pair of yoke beams was centered on the pier's pivot and hanging scaffolds were suspended from the yoke ends. Two stone setting crews then went to work on the scaffolds, operating on opposite sides from each other. Stones were lifted to place by floating cranes.

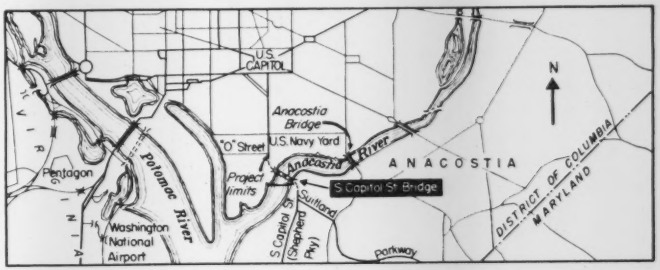
Swing-span erection

When the pivot was in place, erection of the long swing span began. Steel was brought to the site on barges and hoisted to place by floating crane. The span was erected in the open position, for two reasons: traffic to the gun factory and other points had to be maintained, and falsework could be built up from the long fendering system under the open span. Main girders each came to the job in eight pieces, which weighed from 20 to 37 tons. Erection of the swing span began Feb. 10, 1949 and was completed July 15. The bridge will be opened to traffic in December.

RACK GEAR and balance-wheel rail, mounted on pivot pier. Pinions from two motors act on rack to turn bridge; six wheels (one shown) roll on rail. Sliding wedge at right, on superstructure, bears on a pier seat when bridge is closed.



FINAL SECTION of main girder steel goes into swing span superstructure. Falsework on fender system supports sections before they are bolted and riveted.



SITE MAP shows how new bridge will shorten route, by-pass congested streets near naval station. Old Anacostia bridge is narrow, frequently open due to low clearance.

Management

South Capitol Street bridge is a project of the Engineer Department of the District of Columbia. Brig. Gen. Gordon R. Young is engineer commissioner, Lt. Col. L. E. Cox assistant engineer commissioner and L. P. Robertson, is director of highways. H. R. Howser is engineer of bridges; G. I. Sawyer, assistant bridge engineer. A. B. Green and R. D. Wallace were resident engineers on job. The bridge was designed by Modjeski & Masters, Harrisburg, Pa. Substructure contractor was the Dravo Corp., Pittsburgh, Pa., Dick Hansen, superintendent. Superstructure contractor was American Bridge Co., with Roy Hamilton and Timothy O'Connor as successive superintendents of erection.

San Francisco Engineer Group Proposes Dynamic Basis For Earthquake Design

BUILDING CODE provisions governing design to resist earthquake loading (i.e. lateral forces) are in general based on empirical formulas. In recognition of this, new code provisions have been proposed that are based on dynamic principles, yet are practical for everyday use by structural engineers.

A joint committee of the San Francisco Section, American Society of Civil Engineers, and the Structural Engineers Association of Northern California developed these code provisions and presented them for consideration by the membership of the constituent groups at a meeting held Nov. 1, 1949.

Comments by members were invited for a 30-day period after which the committee will reconsider the code. The groups plan to have published at a later date in detailed form the complete committee report as well as the recommended code provisions. Next step will then be to urge adoption by code forming bodies in California and elsewhere.

The code provisions relate the known behavior of simplified, idealized structures under earthquake forces to the behavior of more complicated prototypes of corresponding natural fundamental period of vibration. The method involves: The determination of the total shear transmitted into the structure from the ground; the distribution of that shear as equivalent applied forces up through the structure.

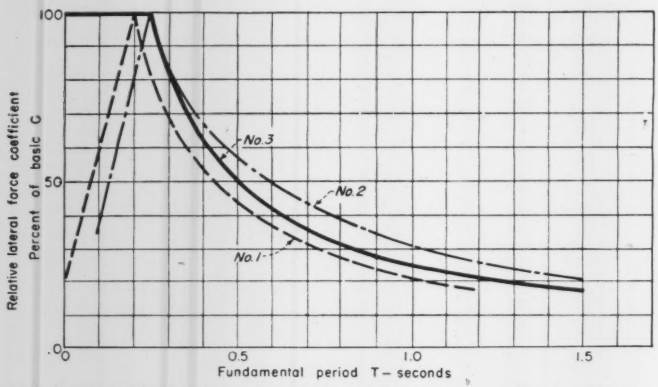


FIG. 1 ON THE BASIS of two separately developed dynamic curves (No. 1 and No. 2), a design curve (No. 3) for lateral force coefficients has been developed.

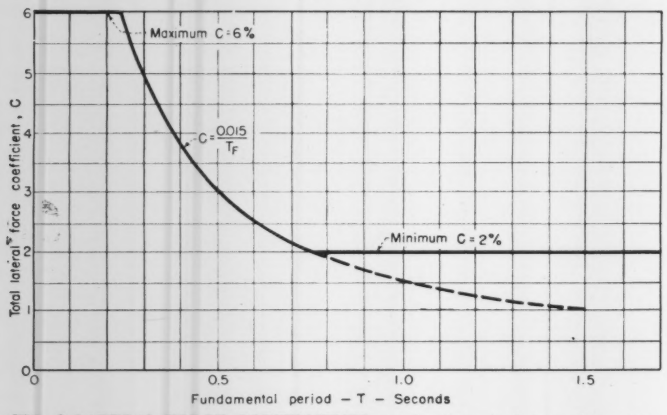


FIG. 2 LATERAL FORCE COEFFICIENTS may be determined from this quantitative design curve proposed by the San Francisco committee.

Behavior of simplified structures

The behavior of simplified one-mass systems, such as a concentrated weight on the end of a weightless cantilever spring, has been studied both analytically and experimentally. The reaction of such idealized structures of varying periods to specific earthquake motion has been determined. These reactions correspond to the base shears developed by a specific or a series of specific earthquake acceleration patterns.

Research at the California Institute of Technology by M. A. Biot made use of a mechanical analyzer to determine the reaction of a simple torsional pendulum to several earthquake acceleration patterns. From these experiments, Biot obtained an average reaction curve which he called a "standard acceleration spectrum" (labeled No. 1 on Fig. 1).

E. C. Robison recently directed the Watson Scientific Computations Laboratory in calculating analytically the reactions of similar one-mass systems at the El Centro, Calif., earthquake of 1940 (ENR Sept. 16, 1948, p. 110). Robison's El Centro data are also shown on Fig. 1 and labeled No. 2.

Both the Biot and Robison curves are plotted on Fig. 1 to a qualitative scale in which the maximum reaction is represented by 100 percent. It will be noted that both curves, No. 1 and No. 2, have remarkably similar shapes, with peaks at 0.2 and 0.25 sec. The curves recede from both sides of the peak in virtually parallel patterns.

Quantitatively, because of the idealized arrangement and because negligible damping was introduced into the one-mass systems, the results shown by curves No. 1 and No. 2 were much higher than would be developed in any real structure. However, qualitatively the data should apply equally well to model and prototype of corresponding period of vibration.

From a practical standpoint for design purposes, the curve marked No. 3 was developed by the committee.

Note that the lateral force coefficients for periods less than the peak mode are not reduced. For vibration periods greater than 0.25 sec. the curve proposes reduction of coefficients along a hyperbola,

$$C = \frac{K}{T} \qquad (1)$$

in which C is the lateral force coefficient, K is a constant and T is the period of vibration in seconds.

The committee has assigned a value of 0.015 for the coefficient K in the foregoing formula. This assignment, based on experience and engineering judgment, transmits the formula from a qualitative to a quantitative one. Also on the basis of experience, the code limits the coefficient C to the range between 0.02 and 0.06. Thus, the lateral force coefficients may be determined from Fig. 2.

The foregoing traces development of a dynamic-type formula for assigning values to lateral force coefficients. To supply this proposed method, the period, T, of the structure must be determined.

Determining vibration period

The U. S. Coast and Geodetic Survey has made a number of period measurements of buildings and other structures. On Fig. 3, representative building periods are plotted against H^2/D, i.e., the height squared over width in the direction considered (both dimensions in feet). The plotted points shot-gun over a wide range, although this particular plot presents a closer correlation than any of several other simple functions tried by the committee. A good average curve appears to be $T = 0.06H/D^{\frac{1}{2}}$. However, for more conservative design purposes, the committee recommends for use in the code the formula:

$$T = 0.05H/D^{\frac{1}{2}} \qquad (2)$$

Although the committee recognizes the limitations in this formula, it is believed important for this purpose, that a reasonable indication of the period be readily made from the basic data or dimensions of the structure. They suggest that future research be directed toward practicable means for computing the period more accurately.

Thus are provided formulas that give a direct relationship between the period and base shear coefficient of a building. Applying the coefficient, C, to the total weight of a building gives the base shear:

$$V = CW. \qquad (3)$$

Distribution of the base shear into equivalent applied forces is the remaining problem. In general, earthquake forces are considered acting at the floor level of the several floors of a building. The floors acting as diaphragms distribute the load to the various wall members, usually in proportion to their rigidity. The remaining problem is then to determine how much or what percentage of the base shear should be applied at these various levels.

Considering combinations of dynamic shear and moment deflection, the committee concluded that a linear deflection curve presents a reasonable basis for distribution of the base shear. This can be summarized by the formula:

$$F_x = \frac{V w_x h_x}{\Sigma wh} \qquad (4)$$

Where F_x = lateral force applied at any level x,

w_x = vertical load at the level x,

h_x = height in feet of level x above the base,

Σwh = summation of all "wh" for the building.

The application of this dynamic approach to a five-story rectangular building is shown in Fig. 4. In addition to the applied forces, F, in the two directions of the principal axes, the ratios F_x/w_x are shown for comparison with the more conventional approach in which the coefficients are specified in relation to the number of stories in a building.

The joint committee on lateral forces of the San Francisco Section, ASCE, and Structural Engineers Association of Northern California was composed of the following: J. E. Rinne, chairman; A. W. Anderson; J. A. Blume; Henry J. Degenkolb; H. B. Hammill; E. M. Knapik; H. L. Marchand; H. C. Powers; G. A. Sedgwick; and H. O. Sjoberg.

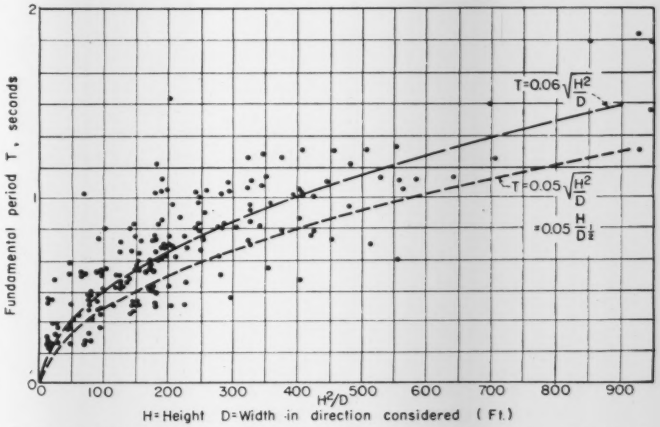
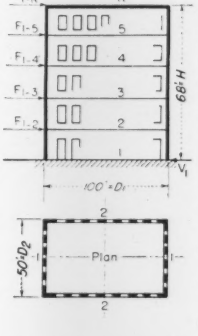


FIG. 3 RESULTS OF USC&GS period measurements plotted as above can be roughly correlated by the curves indicated. The lower is suggested for design purposes.



Δh ft	h ft.	w kips	wh 10^3 k-ft	F_t kips	F_t/w percent	F_2 kips	F_2/w percent
	68	500	34	39.7	7.95	28.1	5.62
12	56	1000	56	65.4	6.54	46.4	4.64
12	44	1000	44	51.3	5.13	36.4	3.64
12	32	1000	32	37.3	3.73	26.5	2.65
12	20	1000	20	23.3	2.33	16.6	1.66
20	0	150	0	0	0	0	0
Totals		4650 =W	186 =Σwh	217.0 =V_t		154.0 =V_2	

$T_t = \frac{0.05H}{\sqrt{D}} = \frac{0.05\times68}{\sqrt{100}} = 0.320$

$C_t = \frac{0.015}{T_t} = \frac{0.015}{0.320} = 0.0468$

$V_t = C_t W = 0.0468 \times 4650 = 217$

$F_{t\text{-}x} = \frac{V_t wh_x}{\Sigma wh} = \frac{217}{186} wh_x = 1.17\, wh_x$

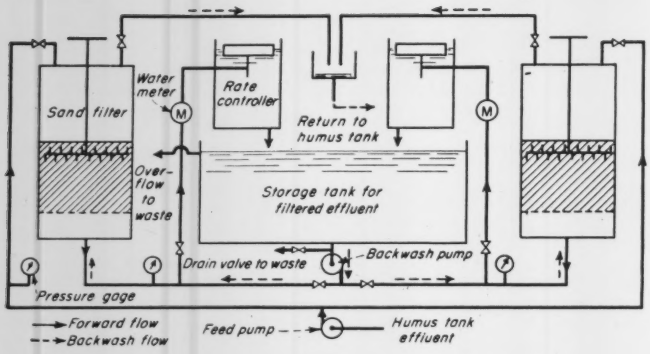
$T_2 = \frac{0.05\times68}{\sqrt{50}} = 0.453$

$C_2 = \frac{0.015}{0.453} = 0.0331$

$V_2 = 0.0331 \times 4650 = 154$

$F_2 = \frac{154}{186} wh_x = 0.828\, wh_x$

FIG. 4 SAMPLE COMPUTATION of the design procedure. Calculations in the lower portion of the figure are made first and then the tabular data are computed.



British Test Rapid Sand Filters As Sewage Effluent Clarifiers

IN AN ATTEMPT to check the value of rapid sand filters for the removal of humus from sewage effluents, the British Water Pollution Research Laboratory has conducted experiments at a plant in Luton, near London.

According to a paper published in THE SURVEYOR, the studies have thus far resulted in these conclusions:

(1) A substantial improvement in the quality of sewage effluent can be obtained by mechanical filtration through suitably graded sand or anthracite, or through a micro-strainer.

(2) It is probable that a micro-strainer could be operated at most sewage-disposal works by gravity head, whereas it is almost certain that sewage effluent would have to be pumped to provide the head required to operate filters containing sand or similar material.

(3) To treat an average dry-weather flow of 1 mgd. in rapid sand filters at a rate of 100 gal. per sq. ft. per hour would require a filtering area of about 425 sq. ft., corresponding to about 32 cu. yd. of medium in beds 2 ft. deep.

(4) Additional treatment of humus tank effluent in sand or anthracite filters of either the shallow gravity type or the pressure type yields an effluent of appreciably higher bacterial quality.

According to A. E. J. Pettet, W. F. Collett and T. H. Summers, who presented the paper, two small-scale filters were operated at about 100 gallons of humus-tank effluent per square foot per hour, using various grades of sand and anthracite. Filtration through fine media gave effluents of very high quality, but the filtering medium rapidly became blocked and runs of only a few hours were obtainable before backwashing became necessary. Much longer runs were obtained with coarser media, and removal of humus remained high, but the pressure at which humus broke through the filter was low.

Run continuously

Each filter was operated continuously except during week-ends, and during the short period (about 30 minutes) required for backwashing—which was done regularly at intervals of about 24 hours.

During the first month (July 1948) no difficulty was encountered in operating the filters continuously. But during the second month, loss of head during each daily run progressively increased until toward the end of the month it was as high as 30 ft. of water. At the beginning of September it was necessary to clear the filters by chlorination.

Operation was then stopped until January 11, 1949. In the third week of February, 1949 the filters were partially emptied of liquid and inspection covers removed. The inside of each filter was then thickly coated with gelatinous material; the surfaces of the anthracite and sand were also coated.

After backwashing and drainage, filters were again opened on May 31 of this year and again allowed to operate.

From experience gained, a pair of semi-scale filters, each one foot in diameter and 15 ft. effective depth, were constructed at the Finham sewage works of the Coventry Corporation. In this case, arrangements were made for blowing air into the base of the filters so that the medium could be loosened before backwashing. Observations indicated that use of the air scour may prevent progressive blocking of the kind noted at Luton. During continuous operation for nine months at the Finham works, no accumulation of gelatinous material occurred and it was not found necessary to clean the filters by chlorination. However, effluents from the Finham filters were not nearly as good as those at Luton.

Another experiment was the use of a micro-strainer. A semi-scale strainer, similar to those already in use for filtration of water, was lent by the firm of Glenfield and Kennedy, Ltd. This strainer consists of woven stainless-steel fabric in the shape of a drum, rotated on a horizontal axis with the drum open at one end and partially submerged in liquid.

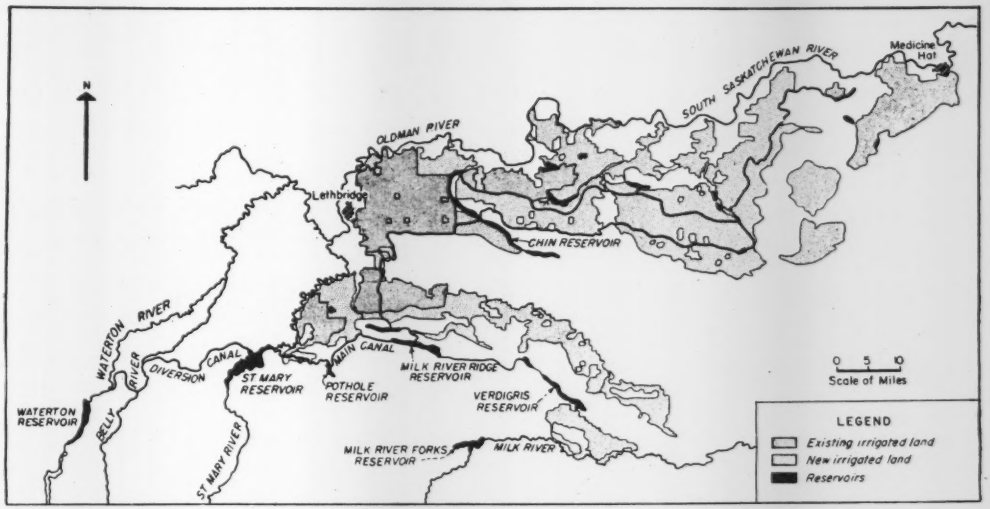
For initial experiments the drum was fitted with a fabric stated to have 58,000 apertures to the square inch, strands having a nominal diameter of 0.06 mm. Later a fabric with 100,000 apertures of 0.045 mm. diameter was used.

The diameter of the drum was 2 ft. 6 in. and the length 1 ft. 8½ in., providing about 13 sq. ft. of straining fabric, of which about 8 sq. ft. are submerged. In first experiments, the drum was rotated once in 28 seconds. Later, it was turned once in 21 seconds. The maximum head required to operate the strainer efficiently was found to be only 9 in. of water.

Operation

Humus-tank effluent entered the drum axially through the open end and passed radially through the straining fabric into the outlet chamber. The exposed fabric was continuously sprayed with strained effluent drawn up from the outlet chamber by a small pump; debris washed off the drum falls into a collecting trough inside the drum and flows out through a pipe passing through the center of the sealed end. Progressive blockage of the fabric was controlled by intermittent chlorination of the strainer at intervals of 3 to 8 days.

Average results of almost continuous operation for one year showed that when the 100,000-aperture straining fabric was used, the content of suspended solids in the humus-tank effluent was reduced by 61 to 73 percent, and that the BOD and amount of oxygen absorbed from permanganate by the effluent was reduced by 31 to 46 percent, and 11 to 24 percent respectively.



St. Mary-Milk River project, to store water from Rocky Mountain rivers, is . . .

Canada's Biggest Irrigation Job

ALMOST half a million acres will be benefited by Canada's biggest irrigation project, now under construction in southwestern Alberta. With first new water to be delivered in 1950, the St. Mary-Milk River project involves several earthfill dams (including Canada's highest), two tunnels and many miles of irrigation canal.

The project area extends about 150 miles in an east-west direction just north of the Montana border. Some 120,000 acres are currently irrigated but there is no storage to guarantee sufficient supply in years of drought. Adequate supply will be assured for these currently irrigated lands and water will be made available to an additional 380,000 acres. Much of the best land to be irrigated lies between the cities of Lethbridge and Medicine Hat, in Alberta.

The project involves storage of water from four rivers (Waterton, Belly, St. Mary and Milk) and transporting this stored water to the land to be irrigated. These rivers all originate in the Rocky Mountains and the terrain slopes gently toward the east. The area to be irrigated varies in elevation from some 3,500 ft. at the western edge to about 2,000 ft. at the eastern edge.

Average precipitation for the area is about 15 in. a year, but rainfall is heavier at the western edge of the project, near the mountains, than it is further east. However, rainfall is sporadic during the hot summer growing period when water is needed.

First project unit completed and in operation was Pothole Dam. This 130-ft. high earthfill, completed in 1948, has a reservoir capacity of only 15,000 acre-ft. It is located on Pothole Creek along the main canal of the project. The creek occupies a narrow, deep gorge and presents a difficult canal crossing problem. Siphon and flume crossings were considered. However, it was decided to construct the reservoir as a balancing pool. This reservoir was useful during the 1949 season to regulate flow for some of the existing irrigation works, justifying its early completion.

Major project unit is St. Mary Dam,

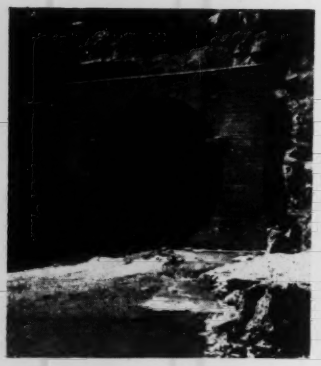
PFRA HISTORY

The Prairie Farm Rehabilitation Administration, Canada's counterpart of the United States Bureau of Reclamation, was founded in 1935 as a direct result of the drought that caused dust-bowl conditions throughout the central plains of North America. A branch of the Department of Agriculture, the PFRA's first function was to relieve dust-bowl conditions. This was done largely through introducing to the farmers improved cultural practices.

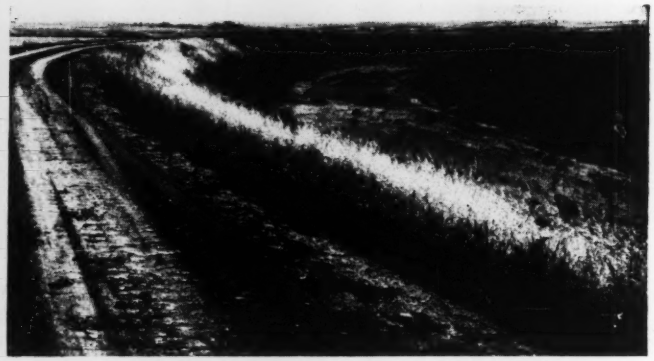
Other PFRA functions include reclamation of submarginal lands and storage of water for irrigation. But Canada entered the war in 1939, and little opportunity was available for extensive work in this regard.

Thus, the St. Mary-Milk River project is the largest project ever to be undertaken by this organization. Investigations for this work were started in 1938 under the direction of W. L. Foss who has worked continuously on the job and is now project engineer. Detailed design work on the St. Mary-Milk River project is accomplished at project headquarters at Lethbridge, Alberta. Because of the scope of this project, Engineering News-Record has sent a staff editor to Canada to review it and the accompanying article is his report.

Headquarters of the PFRA are in Regina, Sask., and G. L. McKenzie is chief engineer. Investigative work is under way for future projects. The largest of these, the South Saskatchewan River project will involve the construction of a 210-ft. high, 35,000,000 cu.yd. earth fill dam with a 6,765,000-acre-ft. reservoir. No appropriations have been as yet made for construction.



LATE COMPLETION of the diversion tunnel delayed the entire project one year.



UNLINED CANALS carry all of the project water. Weed growth helps bind embankments and has no serious effect on flow.

a 191-ft. high earth-fill structure located on the St. Mary River. This will provide major storage (290,000 acre-ft.) on the largest stream in the project area. It will also serve as storage reservoir for water from the Waterton and Belly rivers.

An earth-fill dam will be built on the Waterton River. A canal will take this water to the Belly River and a diversion weir some distance downstream will supply another canal that will carry the water to the St. Mary River. Other reservoirs, yet to be built on the Milk River and in the project area, will store and distribute additional water.

Some 6,000 acres of land will be irrigated for the first time in 1950. Each year thereafter, additional acreage up to 50,000 acres annually, will be brought under cultivation. Present plans call for the entire $23-million project to be completed in another eight years. However, rate of development of new land will be guided by ability of Canada's agricultural economy to assimilate additional production. PFRA engineers are confident that the land will be put to use as rapidly as developed.

Most of the project lands will be crop-rotated for most efficient agricultural development. Four types of crops are involved: Sugar beets, wheat, canning vegetables (corn, bean, peas, etc.) and livestock food (alfalfa, clover, hay, etc.). Sugar produced will total almost a quarter of Canada's demand.

As can be seen by Table I, total storage capacity is 837,000 acre-ft. compared with anticipated demand of 740,000 acre-ft. a year. Besides this nearly 100,000 acre-ft. carryover, even in dry years, there is some flow in the rivers during the summer due to snow melt in the mountains. So there is some reservoir replenishment even after the irrigation season starts.

The entire project will be served by gravity flow, with no pumping involved. No power installations are now being built. It is possible that at some future date power generation may be feasible at energy drops along some of the canals.

One of the main reasons for the lack of power installation is that there is more irrigable land available than there is water to irrigate it. This means that for fullest irrigation development no water can be spared for power generation. Ample power potential is available to the north where the water cannot be so beneficially used for irrigation.

One striking difference in this irrigation project and usual practice in the United States is the absence of extensive concrete work. The only major concrete involved is in the dam spillways and for lining the two tunnels at St. Mary Dam. All of the dams are earth fill, all of the canals are unlined and the only major siphon on the project is wood stave.

One reason for the absence of great quantities of concrete is that the soil is a glacial till that is relatively tight, and seepage losses in canals are not significant. Where the canal is not naturally tight enough, backfill with compacted clay provides a water seal.

Canada's biggest earthfill

St. Mary Dam, Canada's biggest earthfill dam, will store water to a depth of 186 ft. and will contain 4½ million cu.yd. of earth and rock fill. Crest length is 2,536 ft.

The specific location of St. Mary Dam was selected because of several unique features. This site is the only place along the St. Mary River where crest length for a dam of this height would be one-half mile or less. It is the only place where 290,000 acre-ft. of storage is available. This particular site is the only location where good impervious fill is known to exist near a source of rock fill. Further, the dam is located just above a hairpin turn in the river so that the diversion tunnel by crossing this bend has a relatively short length.

Design of St. Mary Dam corresponds to standard practice. A central core of impervious material is enclosed with more random fill on each side. The core width was selected to make best use of the amount of impervious and rock fill available.

A layer of sand and gravel under the random fill, downstream from the impervious core, acts as a filter, to prevent moisture accumulation and subsequent danger of sloughing.

Material for the impervious core has a relatively high clay content (30 percent clay, 35 percent silt, and 35 percent sand). This results in a more easily compacted fill of greater ultimate density.

Moisture is added to the impervious borrow areas by flooding a year before the material is actually needed for fill purposes. This flooding saturates the top 15 to 20 ft. of the borrow area. Below that, the moisture content is adequate without flooding.

When the borrow area is ready to be used, the top 4 or 5 ft. is sometimes too wet. This is disked for drying and material is removed in thin layers. After the supersaturated layer has been removed, the rest of the borrow area is usually of proper moisture content.

With the glacial till available for fill at the St. Mary Dam site, a moisture content of 12 to 14 percent is found to give highest obtainable density. This material is spread in 6-in. layers and compacted by twelve passes of sheepsfoot rollers. The rollers used exert a unit force of 500 psi.

Construction of the 2,115-ft. diversion tunnel delayed the completion of the dam more than a year. The contract was awarded in 1946 and was delayed by post-war difficulties encountered by the contractor in getting adequate materials and personnel. It was finally completed in 1948 so that work on the dam could proceed.

Better results were obtained in the second tunnel constructed, the 2,560-ft. long irrigation tunnel that will serve to feed the canal system. In this case the contractor was hired on a cost plus fixed fee basis.

The irrigation tunnel (17-ft. horseshoe) was constructed on a two-level basis. The contractor first excavated a bench some 20 ft. wide and 10 ft. high through the entire tunnel length. By so doing, smaller mucking and rail equipment could be used; no expensive jumbos were required. Average progress was 8 ft. in an 8-hour shift, and, by using a double shift system, 16 ft. a day was excavated. Once the top half of the tunnel was completely excavated, the contractor started on the lower half and used the same simple construction techniques.

Canals are unlined

The main canal is 56 ft. wide at the bottom, 16 ft. deep, has 2:1 side slopes and will carry 3,200 cfs. As are all of the canals on the project, it is not lined. Compacted clay serves as a water seal in the rare instances where the natural ground is pervious.

On one steep side-hill location, a filter was installed to keep the slope from becoming supersaturated. A 1-ft. thickness of gravel was sandwiched between 2 and 3-ft. layers of compacted till. An open-joint, 6-in. tile drain takes away water seeping from the canal.

Many of the canals have only one bank or dike. Because there is more good irrigable land than there is water, project engineers have concluded that it's cheaper to flood small areas of farmland on the uphill side of canals than it is to construct two banks. Of course, where the land is relatively flat, two banks are built to limit the amount of land so drowned out, as well as minimize evaporation and seepage losses.

Canal construction is divided into many contracts. The objective is to make a contract small enough so that one contractor can do the required work in one construction season.

Joint financing

The project is financed by the Dominion of Canada and the Province of Alberta, and all the engineering and construction is supervised by the Prairie Farm Rehabilitation Administration of Canada's Department of Agriculture. In general, the dominion is financing major works, such as dams and main canals, and the province is financing lateral canal construction and smaller work units.

Pothole Dam is an example of this financing. As early completion would benefit province lands already irrigated, the Province of Alberta financed Pothole Dam construction. The money so advanced will be later credited to construction of laterals when dominion money is available to replace it.

The farmers will be required to pay back about 30 percent of the capital cost plus operation and maintenance charges. The capital cost will be returned by a per acre assessment for irrigation rights. This has not been computed as yet but may run about $20. Annual charges will probably be in the neighborhood of $1.25 an acre for the 1½ to 2 acre-ft. required.

TABLE I—ST. MARY-MILK RIVER PROJECT EARTH FILL DAMS

Name	Height (ft.)	Length (ft.)	Reservoir Capacity (acre-ft.)
Wharton River	150	3,600	132,000
St. Mary	186	2,640	290,000
Pothole	130	850	15,000
Ridge	60	1,600	80,000
Verdigris	60	2,400	140,000
Chin	80	1,700	150,000
Milk River Forks	70	1,000	30,000
		Total	837,000

TABLE II—ST. MARY-MILK RIVER PROJECT

Contract Data

Unit	Contractor	Amount
St. Mary Dam Diversion Tunnel	Bennett & White, Ltd.	$600,000
St. Mary Dam	W. C. Wells Constr. Co., Ltd.	2,100,000
St. Mary Dam Irrigation Tunnel	Assiniboia Engr. Co., Ltd.	*800,000
Pothole Dam and Canal	Western Constr. & Lumber Co.	600,000
Main Canal—Division 1	Doncaster Constr. Co., Ltd.	300,000
Canal Division 3	Brabant Brothers	85,000
Main Canal—Division 3	Continental Constr. Co., Ltd.	70,000
Main Canal—Division 8	Shannon Brothers	70,000
	Total	$4,325,000

* Cost plus fixed-fee contract.

TABLE III—ST. MARY-MILK RIVER PROJECT

St. Mary Dam—Unit Prices

Item	Unit Price	Amount	Extension
Foundation, Stripping (cu. yd.)	.17	60,000	$10,200.00
Foundation, Common Excavation (cu. yd.)	.24	360,000	86,400.00
Foundation, Rock Excavation (cu. yd.)	1.70	200,000	340,000.00
Shale Protection (asphalt) (squares)	1.10	1,500	1,650.00
Borrow Pit Stripping (cu. yd.)	.15	400,000	60,000.00
Borrow Pit A, Excavation (cu. yd.)	.20	3,250,000	650,000.00
Borrow Pit B, Excavation (cu. yd.)	.41	600,000	246,000.00
Borrow Pit C, Excavation (cu. yd.)	.41	300,000	123,000.00
Impervious Rolled Fill, placing only (cu. yd.)	.09	3,000,000	270,000.00
Pervious Random Fill, placing only (cu. yd.)	.05	630,000	31,500.00
Pervious Selected Fill, placing only (cu. yd.)	.05	270,000	13,500.00
Rock Fill, downstream toe (cu. yd.)	1.35	23,000	31,050.00
Additional Rolling, each pass (squares)	.005	1,500,000	7,500.00
Filter—Class a, supply and place (cu. yd.)	1.20	90,000	108,000.00
Filter—Class b, supply and place (cu. yd.)	1.20	12,000	14,400.00
Riprap, Hand Placed, supply and place (cu. yd.)	3.50	15,000	52,500.00
Riprap, Dumped, supply and place (tons)	4.50	42,000	189,000.00
		Total	$2,234,700.00

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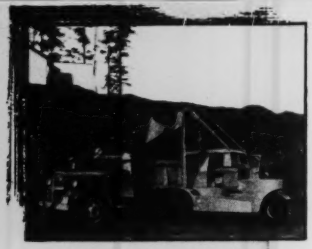

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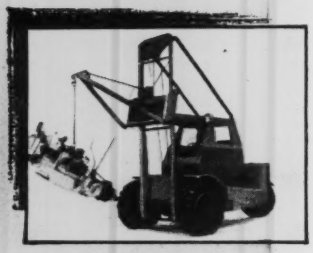

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DEVELOPMENTS ABROAD

Power

France—A project for the construction of a thermal electric power plant of 100,000 kw. capacity at Dechy, has been approved by the Economic Cooperation Administration.

The plant will be operated by Charbonnages de France which controls the French coal industry. Cost of the project includes $15,000,000 in ECA funds and the local currency equivalent of $4,500,000 to be supplied by the French government.

The Dechy plant in the Pas de Calais region will use waste coal, with little market value, as fuel. The annual output is estimated at 400-500 million kwh., a significant addition to the power supply of France.

All of the specifications and equipment for the plant will originate in the United States.

Marshall Plan dollars will be made available to the French government for the purchase of equipment to increase the production of power and improve power distribution throughout France.

ECA funds totalling $16,535,500 will be used by Electricite de France, the government-owned power company, to purchase miscellaneous equipment and spare parts for the interconnected French power system.

The equipment which Electricite de France has ordered or plans to order from the United States falls into three main categories:

1—Civil engineering equipment of types not constructed in France, to be used for large scale clearing, excavating and concreting operations;

2—Mechanical and electrical equipment which cannot be manufactured in France without serious delays in delivery; and

3—Spare parts for equipment purchased from the United States prior to the beginning of the Marshall Plan.

The electric power generation program of France is being developed as a part of the Monnet Plan which provides for a national power program to meet the requirements of increased industrial activity.

India—The third and final stage of the Pykara development in Madras, which includes the Moyar Hydro-electric scheme, is in progress.

The development consists of a 705-ft. dam on Pykara River on the Ootacamund-Mysore Road, creating a new reservoir with storage capacity of 2,000 million-cu.ft. It will be the largest so far constructed on the Nilgiris for

generating water power. Initial expenditure on the scheme will be about $6,500,000.

Irrigation

Australia—Bids for a very large dam extension project in Victoria are to be called for throughout the world. The project is to increase by seven-fold the storage of Eildon Weir, 90 miles northeast of Melbourne.

At present the weir impounds a storage of 306,000 ac.ft. and brings irrigation water to thousands of farms in one of the richest agricultural areas of Australia.

The calling of tenders abroad has been approved by the Prime Minister, but there has been no commitment by the federal government that dollars will be made available to accept the bids of any contractor in the dollar area. However, dollar expenditure probably can not be avoided as some of the heavy equipment required will have to come from the United States. It is indicated that some prospective bidders from abroad are on the way to Australia to investigate the proposition preparatory to bidding.

Municipal Improvements

Mexico—The Federal District department, which includes Mexico City proper, has budgeted about $25,000,000 for construction, improvement and maintenance of the Federal District during 1950.

Construction projected will include widening and improving Avenida Coyocan, one of the principal boulevards leading out of the center of the city; completion of the Tlalpan highway south of Mexico City proper; construction of a giant auditorium in the Plaza de la Ciudadela (near the center of the city); construction of a market place in the suburb of Guadalupe so that peddlers and stands obstructing the famous plaza and church of Guadalupe can be removed to the new area.

These projects are definitely slated for construction during the coming year. A study is also being made for rebuilding much of the historic Zocalo Square on which the presidential palace is located.

Skyscraper Hospital

England—Architect Paul G. Burt, of Chicago, Ill., a member of the firm of Fugard, Burt & Wilkinson, will go to London next spring to help design a skyscraper hospital, said to be the first in England. Burt has been appointed honorary consultant to Guy's Hospital, blitzed in 1941. The new building will have 800 beds.

One of the oldest in the world, this institution was started in 1724.

(Continued on page 36)

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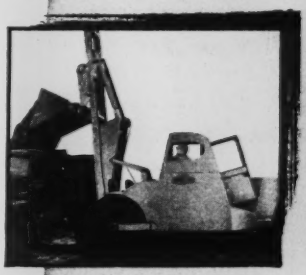

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Brazilians build expandable housing

A Brazilian construction firm is building houses which can be enlarged from one-room dwellings to 5-room homes without major alterations as they grow.

The firm is Coimbra Bueno Companhia Limitada of Rio de Janerio. The two heads are Jeronimo Coimbra Bueno, governor of the state of Goiaz, and his brother, Abelardo Coimbra Bueno. They are experienced builders.

The company started its expandable dwelling construction in 1947 in Rio de Janeiro and in the town of Sao Goncalo near Niteroi.

In the Rio development there are 650 houses already built and a total of 1,133 is scheduled. In Sao Goncalo, 200 houses have been built of the 500 projected.

A majority of the houses have three bedrooms, but a buyer may decide he can afford only a one-room, kitchen and bath layout. When he wants to add one bedroom it is connected to his original room by an opening in the wall near the entrance to the kitchen. By making an opening in the opposite wall, near his bathroom door, he can connect his original room with a second bedroom. For the entrance to a third bedroom, he opens the wall facing his bathroom door. Similar changes are made for the addition of still more rooms.

The houses are of brick with reinforced concrete ceilings. Electric and water installations are placed inside the walls and in such fashion that only simple extensions are needed as the house is expanded.

The company sells the land and the houses. Prices vary according to size of houses and their distance from the railway station. A house intended two years ago to sell for $3250 is now sold for $4730 because of higher costs. The company gets 30 percent down and hopes to collect the remainder, with interest, in five years. It takes a life insurance policy on each of the homeowners.

Transport

Belgium—ECA reports that Belgium, with a national economy dependent upon commercial traffic, is using much of its $50,900,000 Marshall Plan loan to improve its transportation and port facilities.

Thus far about $22,950,000 in loan funds has been earmarked for the construction of better highways, the elimination of shipping bottlenecks, the installation of new petroleum docks in Antwerp, and the completion of an underground railway link.

Highways carrying more traffic now than before the war are being improved with the help of $12,350,000 in loan funds. This includes grade crossing elimination, enlarging ten major roads into four-lane width, and the rechanneling of highway traffic in congested areas.

Marshall Plan loans totaling $5,700,000 will help to bring about the underground linking of the country's north and south railway networks in the heart of Brussels. The link will permit import freight from Antwerp to roll through the city quickly, and it will speed up movement of products of Belgium's heavily industrailized south for export from seaports in the north. Belgium's foreign trade has increased steadily since the war.

To replace the twisting miles of narrow canals which have criss-crossed the port of Ghent for centuries, Belgium is building a 12-mile long circular waterway with 23 permanent bridges. The project, which will take from six to seven years to complete, and will cost a total of $34,240,000, provides for the construction of 17 road bridges, six railroad bridges, and two locks, each capable of holding two large barges. Marshall Plan funds will give a $1,500,000 boost to the project this year.

Brazil—The government is seriously considering the construction of a new railway link between the Itabira iron mines and the portion Aracruz. Economists are urging the new link to make possible a heavy increase in exports from the mines.

Highways

Mexico—Government officials are satisfied that Mexico has met with signal success on its year-old program for improving rural roads.

When the program was formally started, it was found that although the nation was spending at the rate of $20,000,000 a year for roads, most of the money was going for main trunk highways. The problem was to provide access to the many small villages that can produce goods and food, but were unable to reach markets.

To get the rural roads built, the Department of Public Works appointed Rene Etcharren Gutierrez to head a program which consisted of:

Supply by the government only of funds for explosives, right of way and hand tools; construction by residents of each village of road links to the next village.

Since the program was activated, 21 stretches of rural road have been completed—a total of 608 kilometers, at a cost of about $2,000 per kilometer.

Effect of better communications has been a large increase in number of acres planted to food crops.

Italy—Italy reportedly has completed plans for construction for three new motor speedways, and is still considering proposals for a new trans-Alpine road.

In the planning stages are: Alps-Vald'Aosta - Turin - Savona highways; Milan-Simplon-Chiasso highway, and the continuation of the Turin-Milan-Brescia highway as far as Brescia, to complete the Turin to Venice road.

Under consideration are two plans for trans-alpine communications: A long-advocated plan for a tunnel to provide direct communication with Switzerland; the other an equally long-planned tunnel through Mt. Blanc for direct communication with France.

Refinery

Venezuela—The Richmond Oil Co. (a subsidiary of Standard Oil of California) is at present negotiating with the government concerning construction of a new refinery.

To date, the company—which has large petroleum development and exploration concessions on the western shores of Lake Maracaibo—has done no manufacturing in Venezuela, but recently-passed legislation now requires that a percentage of all oil produced be refined in Venezuela.

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MUNICIPAL AFFAIRS

HARBOR TERMINAL SITE—A $6,000,000 passenger-cargo marine terminal will be built by Los Angeles, Calif. Bids will be sought around the first of the year for the project, scheduled for completion during 1951. The 46-acre terminal will be located in the Wilmington district, as indicated by the dotted line in the above illustration, and will include an area 2,350 x 860 ft., with a 2,270-ft. wharf, two single-span overhead construction transit sheds, and parking space for 3,000 cars. All structures of the project will be of permanent, fireproof construction. Rail, truck and roadway facilities for cargo movements will be provided. Overhead passenger ramps to liners will be electrically operated. The harbor's East Basin, adjoining the terminal, is to be dredged to 36 ft., providing a turning basin for large passenger liners.—Spence Air Photo.

Los Angeles equalizes engineering wages

Los Angeles County has raised the pay in 251 engineering jobs and the city of Los Angeles has lowered the salaries in 723 jobs in a move to equalize wages and stop "pirating" between the two agencies. Pay cuts affect only newly hired employees.

One city position—that of civil engineering associate—was cut $51 per month. Top-bracket jobs came in for the largest slashing. Maximum pay for some county engineering posts was raised $24 a month.

The equalizing of engineering salaries stemmed from a joint survey made by city-county boards early this year which showed that the county paid on the average less, while the city paid engineers more than generally paid for similar jobs elsewhere in southern California.

County engineering jobs are based on a five-year increasing scale, while city jobs increase to the maximum in four years.

Building code changes

Improvement of building and other local codes with a view to cutting housing costs and preventing the spread of slums and blight are important objectives of the slum clearance and urban redevelopment section of the Housing Act of 1949, Housing Administrator Raymond M. Foley says.

The Act requires that in extending federal aid, consideration be given to the extent to which the appropriate public bodies in localities interested in slum clearance and redevelopment have undertaken positive programs for encouraging housing cost reduction and for preventing the recurrence of slums and blighted areas, through the adoption, improvement and modernization of building and other local codes and regulations.

One of the purposes of the provision is to encourage cost reductions through the use of new materials and techniques, residential planning and design and construction, and the elimination of restrictive practices. Another purpose is to prevent the spread of slums and blighted areas through the adoption, improvement and modernization of local codes and regulations relating to land use and adequate standards of health, sanitation, and safety for dwelling accommodations.

Phoenix Sanitary District

A large sanitary district to serve 40,000 residents in a 20,000-acre area west and north of the city limits of Phoenix, Ariz., is being organized. The engineering firm of Headman, Ferguson and Carollo is in charge of preliminary work.

At present, the area is serviced by individual cesspools which have become a health menace in a region that is overpumping a meager underwater supply for irrigation and domestic use. The system is planned to handle an ultimate population of 200,000, and will be constructed over a 20-year period.

Municipal Briefs

Reducing Fire Hazards—More than 50 changes in city traffic regulations designed to reduce fire hazards and congestion in narrow streets were approved by directors of the Wilmington Del., street and sewer department on the recommendation of the Department of Public Safety.

Edwin F. Koester, chief engineer, points out that some of the streets involved are 20 ft. or less in width.

State Aid Saves Money—Akron, Ohio, during the next two years, will have to pay 10 percent less than expected for its expressway program. This is the result of a new formula for state aid to cities building state highways within their borders, according to Service Director Marvin L. Davis. However, State Highway Director T. J. Kauer announced that he would be unable to make any change in the present setup for land purchase in expressway construction. Cities, the state and the federal government each pay one-third of such expenses.

Water Saving—Water department officials of the District of Columbia say that the district is saving $160,000 a year as a result of a survey of leaks in water mains and a check of meters used by large water consumers. James R. Mitchell, district engineer in charge of water consumption and conservation, said the leak survey, made over the last six years, disclosed losses of water totaling 7,456,000 gpd. It was also shown that large meters were under-registering the water being used by 2,350,000gpd.

A 148-page document on the capital improvement program for Baltimore, Md., released by the City Planning Commission, recommends an expenditure of $194,574,780 during the next few years, $69,952,880 of it to be raised through loans.

Houston Sewers—Plans and specifications for two sanitary sewer and two storm sewer projects have been approved by the city council of Houston, Tex. Biggest of the projects is the Lockwood Drive sanitary sewer trunk line to cost about $788,000 and provides sewer facilities for 1,000 additional homes.

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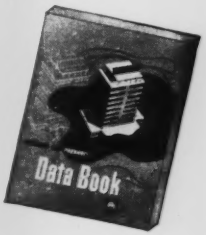

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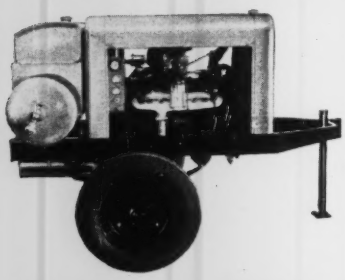

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MEN AND JOBS

Peter F. Hanssel has been appointed resident engineer for the $20,000,000 Veterans Hospital in Buffalo, N. Y., now nearing completion. He succeeds Elmer H. Gruenwald who has been transferred by the Corps of Engineers to the West Coast, where he will be in charge of construction of a large dam. Mr. Hanssel, in the construction industry for more than 20 years, studied civil engineering at the University of Notre Dame. He was associated with the Turner Construction Co. at Buffalo before joining the Corps of Engineers in 1948.

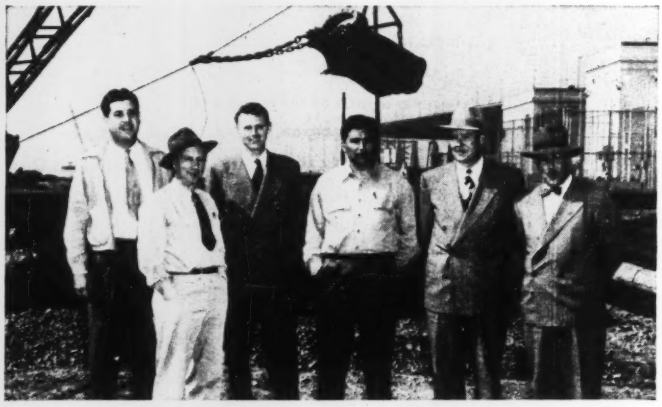
As a first step in a readjustment of the Weather Bureau field organization, **Verne Alexander**, formerly engineer for the Kansas City Regional office, has been designated area engineer for the North Central area comprising the Missouri and Mississippi River Basins above Cairo, Ill. His headquarters will continue at Kansas City, Mo. **William E. Hiatt**, former regional officer, has been transferred to Washington, D. C., to be engineer for the eastern area. This area includes the Ohio River basin and also the North and Middle Atlantic states.

Cameron G. Will, principal assistant city engineer of Seattle, Wash., has retired from municipal service after 38 years. He joined the department in 1911, two years after his graduation from the University of Washington engineering school, and has been with it ever since, except for three years when he was loaned to City Light to superintend construction of the first unit of Ross Dam. Mr. Will has been principal assistant city engineer for eight years and also has served as acting city engineer, having a major part in the design and construction of all civic improvements carried out in that time.

Charles P. Smith has been named liaison representative of the Ohio Highway Department to the Ohio Turnpike Commission. He has been with the highway department's Bureau of Bridges since 1926. His principal duties will concern technical matters in organization of the commission and with preliminary engineering studies.

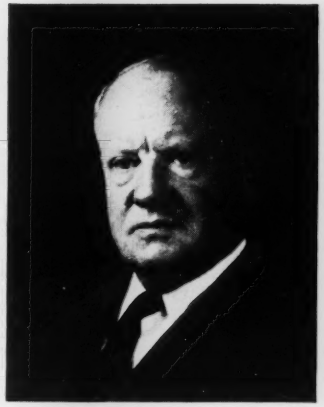
Lawrence C. Crawford, district engineer at Iowa City, Iowa, for nine years, has been named district engineer for the Columbus, Ohio, surface water branch, the U.S. Geological Survey's Water Resources Division announced. He succeeds **C. V. Youngquist**, who has joined the newly-formed Ohio Department of Natural Resources.

J. S. McMahon has been put in charge of the recently reorganized Project Engineering Division of the Hanford Works at Richland, Wash. Under the new setup, the former Project Engineering Division, also

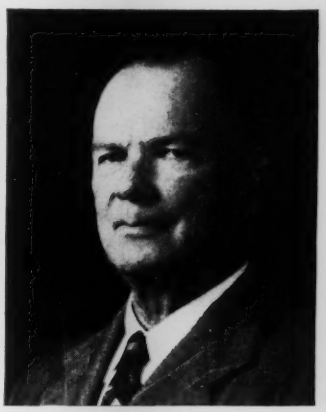


Representatives of the East Bay Municipal Utility District and of Ben C. Gerwick Co., general contractors, are shown as construction started on the land-borne section of the outfall sewer, unit of the $23,500,000 East Bay Sewage dispostal project, Calif. Left to right: Dan Prodanovich, senior civil engineer, EBMUD; Otto Bohl, resident engineer, EBMUD; Ben C. Gerwick, Jr., vice-president, Ben C. Gerwick, Inc.; A. Cantor, project superintendent, Ben C. Gerwick, Inc.; W. R. McLean, supervising civil engineer, EBMUD; Joseph DeCosta, manager, Water Distribution Division, EBMUD.

Lt. Colonel Ellsworth I. Davis has become district engineer of the Galveston District, Corps of Engineers, after having been assistant district engineer at Sacramento, Calif. Colonel Davis entered the Corps upon graduation from the U. S. Military Academy in 1932. He received his master's degree in engineering from M.I.T. He will now administer a $50,000,000 construction program, and a $10,500,000 military housing construction program.



Ending a long career with the Bureau of Reclamation, R. B. Williams, assistant district manager for the Columbia Basin Project of eastern Washington, is retiring. He joined the bureau on the Flathead Project in Montana in 1912 following graduation as a civil engineer from Montana State College going to Washington, in 1937 as assistant commissioner. He has received the Interior Department gold medal and distinguished service award.



Orin G. Patch, retired chief concrete engineer of the Bureau of Reclamation's Columbia River district at Coulee Dam, Wash., has been awarded the Department of the Interior Gold Medal and Distinguished Service Certificate. Among his accomplishments were: The development of a method for the accelerated curing of concrete cylinders; and development of meter to determine percentage of air entrained in concrete.

headed by McMahon, has been divided into a Design Division, a Control Division, and a Minor Construction Division. **S. F. Schure** has been named superintendent of the Design section, **J. W. Brands** heads Control, and **J. M. Heffner** is in charge of Minor Construction. Formerly, Schure was assistant superintendent of Project Engineering Division, Brands was assistant superintendent of Transportation Division, and Heffner was superintendent of Public Works Division in the Community Divisions.

Eugene A. Howard, director of Milwaukee, Wis., county regional planning department, has been appointed county highway commissioner and commissioner of public works, succeeding Wm. F. Cavanaugh, retired.

A. J. Delong, former assistant superintendent of Design Division at Hanford Works, has been appointed superintendent of the Community Public Works Divisions at Richland, Wash. **C. R. Bergdahl,** newly appointed head of the Operation and Maintenance Division, and **C. E. Lange,** who has just been put in charge of the Engineering Division, will also work with Mr. Delong.

Walter J. Higgins, Portland, Ore., civil engineer, has been appointed consulting engineer for Smithwick Concrete Products Co., which has block manufacturing plants at Portland and Eugene, Ore. Higgins will give technical assistance to architects and the building industry generally on construction problems. The Smithwick company is constructing a new plant at Portland for production of expanded shale, used in ready-mix concrete.

August D. Thau, Chief of the Operations Division of the Nashville District of the Corps of Engineers, has been transferred to Nashville from the Engineer Depot, Granite City, Ill., where he served as chief of the maintenance division. During the war he was with the Corps of Engineers, including a five months' tour of duty, in Europe. He will be responsible for the operation and maintenance of all Cumberland River locks and dams, all Tennessee River locks, the maintenance of all completed flood control and multi-purpose structures of the Nashville District.

Harold A. Blauvelt, formerly with Andrews & Clark, of New York City, as chief of design, is now in charge of the Barrington, N. J., office of Gannett Fleming Corddry & Carpenter, Inc., on Section 2 of the New Jersey Turnpike.

R. L. Burton is head of the newly-created traffic engineering division of the Oklahoma state highway department. He has been assistant director and chief of the traffic control division of the Oklahoma state safety department since its creation in 1937, except for three years in the war. He studied traffic engineering at Michigan, Tennessee and Yale universities.

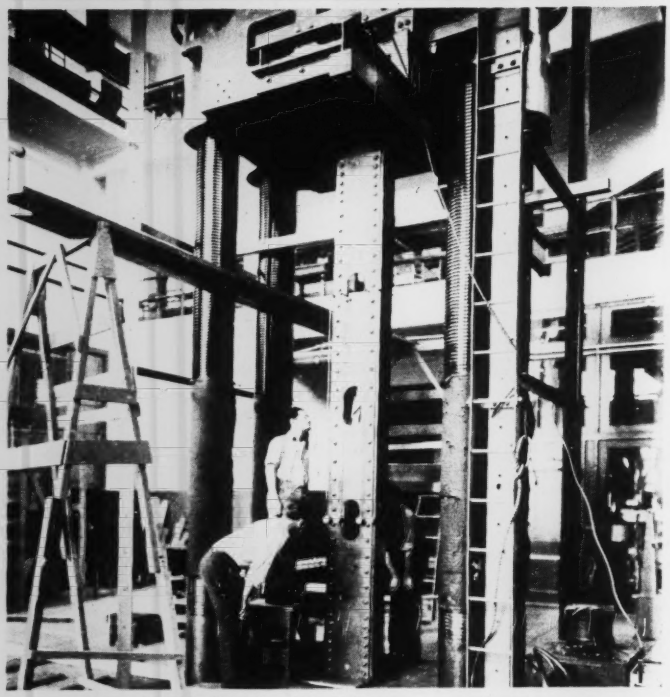
Walter O. Shekner is the project engineer of the Berryland housing project in Milwaukee, Wis.

Edmund Hirsch has been promoted to chief sewer engineer and Ted Prowdzik to civil engineer III in the bureau of sewers of Milwaukee, Wisconsin.

First woman civil engineer to be employed by the Ohio Highway Department, Columbus, is **Miss Dorothy Mainey,** 22, a 1949 graduate of Purdue University. She was among those employed in the highway department's three-year training program to give young engineers practical experience. She will be with the bureau of location and design, and will work at Newark, Ohio. Her father, **J. H. Mainey,** also is a civil engineer.

Mark B. Owen, with **Robt. L. Meek,** has opened offices at 1920 North Meridian St., Indianapolis 2, Ind., specializing in incineration of municipal and industrial refuse, industrial waste treatment, sewerage, water supply, etc.

EDUCATION and RESEARCH



FULL-SIZE COLUMNS TESTED—Axial stiffness was measured with compressometers in this 600,000-lb. testing machine in a study of perforated steel cover plates for bridge columns made by the National Bureau of Standards, Washington, D. C. The results of the tests made for the American Institute of Steel Construction indicate that this type of plate contributes to the strength and stiffness of built-up columns. Technical Report 1392 of the NBS says that the net area of a perforated plate column may be used safely for design purposes.

NBS Fellowships

The National Bureau of Standards has established an integrated work-study program, beginning at the college sophomore level, for the selection and training of its research scientists and engineers.

For the college undergraduate, there is a work-study program leading to permanent appointment as a professional member of the bureau staff. Students who have completed at least two years of an engineering or science course are appointed under this plan as student aids on the basis of a test of general ability, which also qualifies them for permanent professional appointment after graduation. Those who have credit for two years of college receive a salary of $208 per month, while those who have finished their junior year are paid $227 a month. Usually appointments are for a three-month period during the summer vacation. However, if greater work experience is desired than can be obtained in one or two summers, the last two or three years of the college course may be spent in alternate periods of work and study under the cooperative plan of education offered by a number of technical schools.

Full information may be obtained from the National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.

M. I. T. Development

The Massachusetts Institute of Technology on Nov. 9 opened a nation-wide campaign for a $20,000,000 development fund to aid the largest building expansion program in the institute's history. At a New York dinner attended by 700 persons, President James R. Killian, Jr., warned that government subsidies to technical schools would menace their independence. He called on industry to aid such institutions. Alfred P. Sloan, Jr., chairman of the board of the General Motors Corp. and honorary chairman of the institute's committee on financing development, said "Education must be kept free and clear of government domination. The time has come when our business institutions and corporations must assume the responsibility for supporting technological institutions."

The institute's new building program in Cambridge, Mass., was begun last year. Plans are being drawn for a metal processing laboratory, made possible by a $1,000,000 gift from Mr. Sloan. Four other laboratories, and additional student housing and recreational facilities are critically needed for the near future.

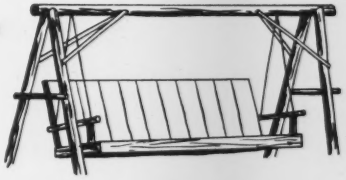
Research Projects

Industry and government agencies invested research appropriations amounting to $4,116,500 for scientific research at Armour Research Foundation of the Illinois Institute of Technology, Chicago, during the fiscal year ended Aug. 31 last. This is an increase of 22 percent over the foundation's volume for the previous year, according to Haldon A. Leedy, director.

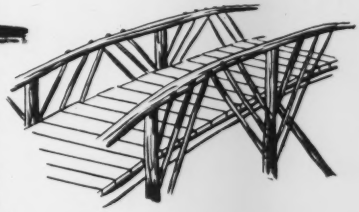
The foundation is a non-endowed, not-for-profit scientific research and development organization founded in 1936 to provide a confidential research and experimental engineering service to industry. Any excess of income over expenses is used to finance fundamental research in the public interest and to pay for the foundation's continuing public service activities in this field.

Boris A. Bakhmeteff, professor of civil engineering at Columbia University, has been named chairman of the Engineering Foundation, New York. During the year the foundation has sponsored and supported 14 research projects on such subjects as properties of riveted and bolted structures for bridges, of steel at various temperatures, of reinforced concrete for building construction, welds, lubricants, and others. The foundation, a department of United Engineering Trustees, Inc., has been engaged in important research activities for more than 35 years.

Dean George Marston of the University of Massachusetts school of engineering has announced a $1,500 award from the Research Corporation of New York to be used to investigate yielding in mild steel and soft iron. The work will be under Prof. Merit P. White, head of the department of civil engineering, Prof. Carl A. Keyser, and Instructor James Coffey.



Avoid unnecessary maintenance and too early replacement



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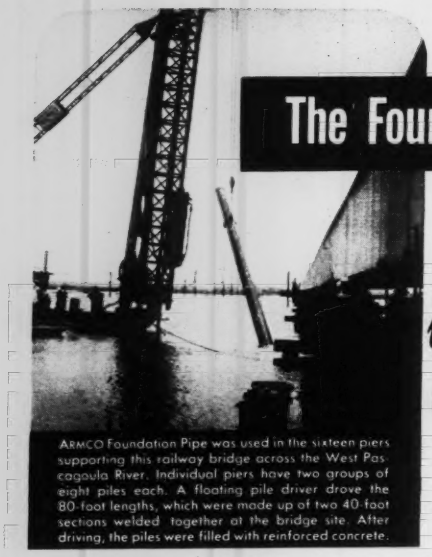

The Foundation Pipe with the "BIG 6"

ARMCO Foundation Pipe was used in the sixteen piers supporting this railway bridge across the West Pascagoula River. Individual piers have two groups of eight piles each. A floating pile driver drove the 80-foot lengths, which were made up of two 40-foot sections welded together at the bridge site. After driving, the piles were filled with reinforced concrete.

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2. **By ordering any specified lengths that can be handled and shipped, cut-off losses are reduced and field operations speeded.**
3. **ARMCO Pipe is exceptionally round and straight. This reduces the number of crooked or rejected piles, and piles with specified load reduction. It also makes inspection easier after driving.**
4. **Uniform diameter end-to-end means salvageable cut-offs, constant cross section for good end bearing, and high bending resistance throughout the length.**
5. **Steel end-closure plates, cone drive-points, special-cutting shoes or welding collars can be mill-attached to eliminate inconvenience and cost of field welding.**
6. **The tough spiral weld imparts high collapse resistance and extra lateral stiffness to even the longest lengths. ARMCO Pipe drives straight and requires only a simple driving head and no mandrel.**

Keep that next job right on schedule by using strong, easy-to-handle ARMCO Foundation Pipe. Ask for a quotation on your specific needs. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 2805 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO FOUNDATION PIPE ARMCO

Elections and Activities

The Connecticut Chapter of the Associated General Contractors of America has elected: President, Earl C. Wheeler, Hartford; vice-president, Frank P. Sullivan, president of the Frank P. Sullivan Construction Co., East Haven; secretary, Edward Bray, president Edward E. Bray Co., Bridgeport; treasurer, A. Scott Paterson, New Haven. Directors: Edward F. Kelley, Kelley-Wood Co., New Haven; Steven Gowrie, H. Wales Lines Co., Meriden; Angelo Giardini, Associated Construction Co., Hartford; Philip Epifano, president E. & F. Construction Co., Bridgeport, who was elected for three years. Mr. Wheeler succeeds Walter A. Hubbell, Bridgeport, as president. Mr. Hubbell becomes director emeritus.

At the annual convention of the Maritime Water Works Association, held at Amherst, N. S., Ira P. Macnab, chief engineer and manager of the Halifax, N. S., Public Service Commission, was named president; W. R. Godfrey, city engineer, St. John, N. B., vice-president; Douglas Kline, Halifax, secretary-treasurer. Members of the council are: F. C. Wightman, Amherst, N. S.; A. F. Wigglesworth, Liverpool, N. S.; W. D. Edington, Moncton, N. B.; W. W. Steeves, Woodstock, N. B.; S. C. Matheson, Charlottetown, P. E. I. Equipment councillors are: J. L. McAvity, St. John, N. B. and S. T. Fetterley, Halifax.

MAJOR MEETINGS

National Society of Professional Engineers, Hotel Rice, Houston, Tex., Dec. 8-10.

Highway Research Board, National Academy of Sciences, Washington, D. C., Dec. 12-16.

National Research Council, Washington, D. C., Dec. 13-16.

Canadian Construction Association, Mount Royal Hotel, Montreal, Que., Jan. 15-18.

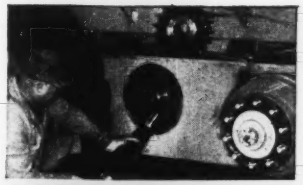
American Water Works Association, N. Y. Section midwinter luncheon, Hotel Statler, New York, N. Y., Jan. 17.

Associated Equipment Distributors, Stevens Hotel, Chicago, Ill., Jan. 15-19.

National Association of Home Builders, Congress and Stevens Hotels, Chicago, Ill., Feb. 19-23.

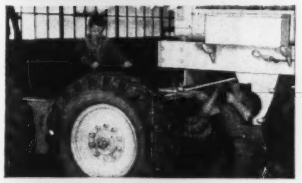
Associated General Contractors of America, national convention, San Francisco, Calif., Feb. 27-March 3.

Adams Motor Graders

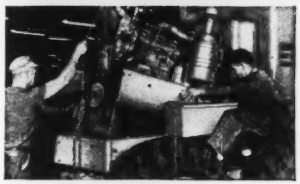


REAR AXLE REPLACED BY 1 MAN IN FROM 2 TO 4 HOURS

CLUTCH OVERHAUL REQUIRES 1 MAN 4 HOURS OR LESS



TRANSMISSION REMOVED BY 2 MEN IN 2½ HOURS OR LESS



ENGINE REMOVED BY 2 MEN IN 3 HOURS OR LESS

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On the job, owners quickly discover that Adams Motor Graders have abundant power, strength and stamina—plenty of everything it takes for handling roughest, toughest work . . . for punching shale out of hillsides—making heavy ditch and bank cuts—scarifying hard surface material—bucking through deep snow drifts, etc.

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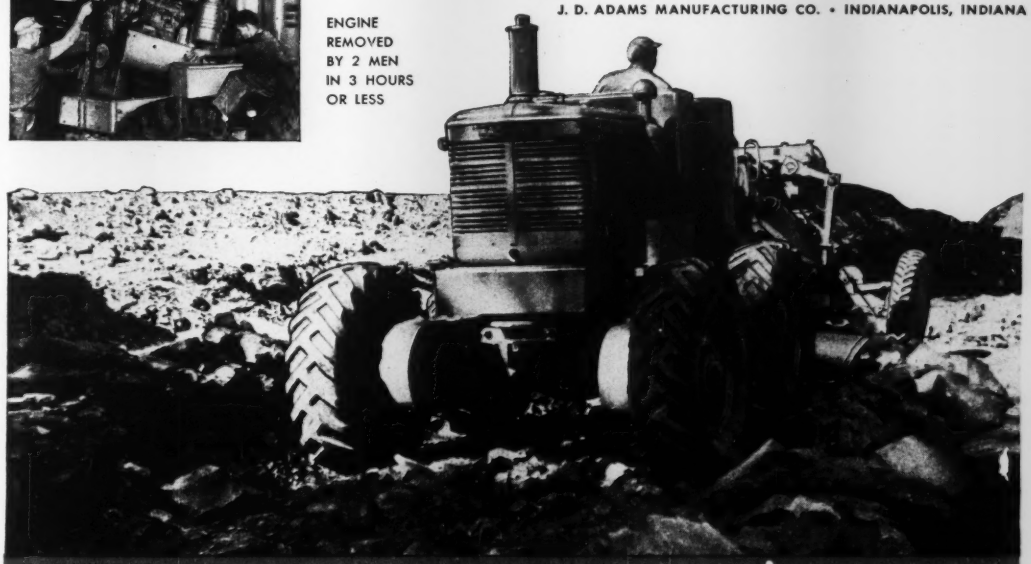

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Long Life—Toncan is an Alloy Iron—contains double the amount of copper used in ordinary copper-bearing iron and steel, *plus molybdenum* . . . resists rust and corrosion. Strong and flexible, it supports heavy loads . . . resists vibration, impact, settling earth, weather changes and other risks . . . will not crack or crumble in hauling or in service.

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OBITUARY

Peter Diederich, 68, general manager and chief engineer of the public service department of Glendale, Calif., died Nov. 1, after 40 years service for the city. He had been appointed head of the combined water and electric departments in 1919. He was active in the formation of the Metropolitan Water District to bring water from the Colorado River.

Willard S. Chapman, 57, engineer of Bremer County, Ia., for the last 21 years, died at Waverly, Ia., recently.

James F. Sanborn, 73, consulting engineer, New York, former district engineer for the New York City Board of Water Supply, died at Framingham, Mass., Nov. 12. A graduate of Harvard in 1899, Mr. Sanborn early specialized in geological exploration and in mining and tunnel work. Previous to his employment on the Catskill aqueduct in 1905, he was an assistant engineer on the construction work of the Battery tunnel for the New York Rapid Transit Commission. On the Catskill work he first had charge of preliminary surveys for the northern aqueduct from the Ashokan reservoir to the Hudson River. Later he was assigned to geological work for the Board of Water Supply.

In 1923 Mr. Sanborn formed a consulting engineering partnership with Clinton L. Bogert, which was continued until 1943. Recently he has been practicing under his own name.

P. S. Shepard, 51, engineer for the Illinois highway department, was killed in an automobile collision near Hamel, Ill. on Nov. 10.

Howard Knoll Rumberger, 80, one-time city engineer of Bellingham, Wash., died there Nov. 15. He attended Pennsylvania State College, went to Alaska before the gold rush days of 1898 and was employed as a civil engineer on a railroad there.

E. J. W. Theobald, 71, a retired civil engineer and former British consul to Ecuador, died at Miami, Fla. Nov. 6.

Herbert William Rankin, 64, city building supervisor at Albuquerque, N. M., died Nov. 10. He received his degree in civil engineering at the University of Kansas. For a number years after 1912, Mr. Rankin was city manager of Radford, Va.

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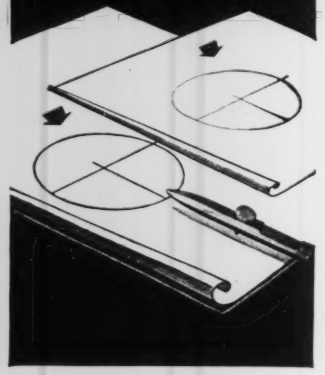

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UNIT PRICES BID BY CONTRACTORS

Hunts Point Sewage Treatment Plant, Bronx, New York

Six contracts totalling $15,597,129 for the short period activated sludge plant to treat domestic sewage, at Hunts Point, Bronx, N. Y. were let to the low bidders at prices 12½ percent under the engineers' estimates and 21 percent below the high bids.

Only a third of the items bid were on unit prices. All others were lump sum bids. In the following cost analysis, the lump sum prices are reported as percent of total contract price for the plant.

The present contracts are for a plant to treat 120 mgd. The design provides for future enlargement to 150 mgd. Population served is 770,000 with an estimated 961,000 people to be provided for by 1970 or later. Tributary area is 15,600 acres, 4 miles by 7 miles along Long Island Sound. Gas recovered will serve as fuel for 4 gas engines totalling 3600 hp. Digested sludge will be barged to sea in steel tankers.

Completion date is Dec. 1, 1951 with contract time 730 calendar days, $200 per day liquidated damages. Deliveries to site can be made by truck or by water. Wages paid include: carpenters, $2.75 per hr., 7-hr. day, ironworkers $3 per hr., 8-hr. day; electrical workers $3 per hr., 7-hr. day; steam fitters $2.75 per hr.; 7-hr. day, common labor on excavating $1.70 per hr., 8-hr. day.

Prefabricated concrete slabs are 3-to-10-in. thick. CLASS 45 concrete requires, per cu. yd. of concrete, 6 bags cement, 5½ gal. water per bag. CLASS 35, 5½ bags, 6½ gal., CLASS 25, 5 bags, 7½ gal., CLASS 15, 4 bags of cement, 8½ gal. of water per bag.

Planning and construction are under the jurisdiction of Frederick H. Zurmuhlen, commissioner of public works, New York, N. Y. Greeley & Hansen, Chicago, are consulting engineers, under direction of Richard H. Gould, director of public works, Wellington Donaldson, assistant director, division of sewage disposal, and William O'Leary, chief, bureau of sewage disposal design. Construction will be under direction of Alfred R. Glock, chief, bureau of sewage disposal construction, and Henry Vermont, resident engineer.

Contract	Low Bidder & Contractor	Low	%	Second Low Bid	%
1 Struct. & equip	J. Rich Steers, Inc.	$13,557,355	87.0	$13,801,867	86.6
2 Electrical work	J. Livingston & Co.	1,062,000	6.8	1,078,319	6.8
3 Plumbing	Ed. B. Kearney Co.	69,950	.4	79,980	0.5
4 Heating & Vent.	Kerby Saunders, Inc.	156,360	1.0	167,300	1.0
5 Pumping units	Worthington Pump & Mach. Co.	268,770	1.7	285,150	1.8
6 Engines, generators, blowers	Cooper-Bessemer Corp.	482,694	3.1	526,283	3.3
Total, 6 contracts		$15,597,129	100.0	$15,938,899	100.0

Contract 1, Two lowest bids

Items	Quantity	Unit Prices 1a	1b
Dike—excav.	cy 129,000	$1.20	$1.52
Dike—sand-grav.	cy 80,000	1.10	2.75
Soil bearing tests	ea 5	1,800.00	1,260.00
Earth excav. above elev. 0.0	cy 86,700	1.50	2.38
Below elev. 0.0	cy 70,000	1.50	2.62
Borrow	cy 1,000	1.25	3.10
Rock excav.	cy 12,000	8.50	25.00
Timber & lumber sheeting lip	M fbm 100	100.00	165.00
Wood piles	lf 530,000	.75	1.00
Concr. filled steel piles	lf 12,000	8.50	7.82
Prec. concr. slabs	sf 30,000	1.60	1.42
Rip rap	ton 32,000	3.00	3.54
Rock fill	ton 15,000	3.00	3.34
Portland cement	bbl 108,000	4.00	3.66
Concrete—class 45	cy 100	30.00	44.30
Class 35	cy 69,000	30.00	32.00
Class 25	cy 2,000	26.00	19.13
Class 15	cy 100	24.00	16.52
Rubbed concr. finish Class "A"	sf 153,400	.20	.28
Class "B"	sf 300,000	.10	.23
Cmt. floor finish	sf 30,000	.55	1.30
Concr. floor hard treatment	sf 75,000	.10	.06
Steel reinf.	thous lb 11,285	130.00	130.00
Struct. steel	lb 400,000	.25	.31
Misc. wr. met. Steel, plain	lb 25,000	.24	.25
Steel, galv.	lb 8,800	.50	.50
Bronze	lb 500	2.00	1.80
Aluminum	lb 500	2.00	2.00
Cadmium plated mild steel	lb 500	1.60	1.90
Stainless steel	lb 300	11.00	5.00
Misc. iron cast	lb 50,000	.30	.35
Floor grating—1"	sf 1,500	2.60	2.10
1¼"	sf 300	3.00	2.35
1½"	sf 2,000	3.50	2.60
1¾"	sf 300	4.00	2.75
2"	sf 1,200	4.00	3.15
2½"	sf 400	4.50	3.25
Welded pipe rail single rail	lf 4,000	4.00	4.50
double rail	lf 7,000	4.50	5.00
three rail	lf 100	6.25	7.00
Copper water stps	lb 40,000	.85	1.10
Sponge rubber sheet filler	sf 1,000	1.65	2.70
Impregn. fibre sheet filler	sf 21,000	.60	1.00
Exp. joints-priming comp. & poured rubber comp.	sf 1,000	.55	1.00
Maint. engrs. fld. off.	per mo. 24	500.00	831.00

See lump sum table for rest of items.

1a J. Rich Steers, Inc. (Contr.) $13,557,355.†

1b Merritt-Chapman & Scott Corp. $13,801,867.†

† Alternate B bids.

Contract 1

Items, low bid	Lump sum	% *
Outfall	$450,000	2.88
Repair phys. damage to adj. prop. & struct.	160,000	1.02
Dock	950,000	6.09
Spec. prep. of site under & around struct.	1,095,000	7.02
Steel gas stops	6,600	.04
C. I. pipe lines	400,000	2.56
Wrought pipe lines	350,000	2.24
Misc. treated timber	30,000	.20
Meter & registers	195,000	1.25
Coarse screens	18,200	.11
Fine screens	34,000	.20
Drains	84,000	.53
Grit removal mechanism	95,000	.60
Grit washers	54,000	.34
Sludge collector mechs	435,000	2.78
Air diffuser sys.	343,000	2.19
Scum removal equip.	16,500	.10

Relief reg. & flame traps flame cells & waste gas burners	12,000	.08
Heat exchangers	42,000	.30
Auto. vacuum priming units	3,000	.02
Vacuum pumping units	2,000	.01
Jacket water temp. control sys.	4,000	.03
Hoisting equip.	55,000	.40
Air compressor	2,000	.01
Valves & sluice gates	583,000	3.73
Cone check valves	76,000	.50
Air filters	11,300	.07
Pumping units	131,000	.83
Tanks	15,000	.09
Indica., meas. & sampl. devices	28,000	.17
Tank insul.-brick	150,000	.96
Tank insul.-top cover	45,000	.30
Architectural		
Main bldg.	830,000	5.32
West sludge pumping sta.	42,000	.26
East sludge pumping sta.	42,000	.26
North aeration building	47,000	.30
South aeration building	47,000	.30
Digestion building	59,000	.40
Separation building	33,000	.21
Effluent pumping sta.	8,000	.05
Tunnel entrance building	10,000	.06
Sub-station	20,000	.12
Inlet gate chambers	5,000	.03
Outside piping	100,000	.64
Gas domes	12,000	.08
Laboratory equip.	20,000	.12
Machine shop equip.	12,000	.08
Port. equip. & tools	22,000	.13
Off. sup. & equip.	10,000	.07
Laboratory supplies	7,000	.04
Sl. tank walls—Alt. B	594,000	3.80
Gas holder —Alt. B	102,000	.70
Total—Lump Sum	$7,897,600	50.62

* % of $15,597,129, total of 6 contracts.

Contract 2, Electrical work

Items, low bid	Lump sum	%*
Outdoor substation	$77,875	.50
5000 volt switchgear	95,305	.61
Control benchboards	21,454	.13
Equip. for sewage pump & blower motors	63,504	.40
600 volt switchgear	30,690	.20
Misc. switchboards	40,143	.26
Stor. battery & charg. equip.	11,321	.07
Indoor pwr. & light. transf.	27,084	.17
Distribution centers & aux. motor controls	185,791	1.20
Misc. panels & devices	8,254	.05
Light. & serv. outl. sys.	110,482	.71
Conduit sys. & indoor grounding	133,972	.86
Cable & wire for power, lighting & control	75,280	.48
Teleph. & code call. sys.	14,450	.09
Elect. mh. & duct sys.	73,353	.47
Outdoor Ltg. systems	54,920	.35
Port. instr. & serv. appl.	4,695	.03
Port. insul. test set	1,597	.01
Temp. light & power-inst. energizing & removal	20,077	.13
Temp. light & power maint.	5,753	.04
Temp. light & power energy	4,000	.03
Maint. before compl. of wk.	2,000	.01
Total Lump Sum	$1,062,000	6.80

* % of $15,597,129, total of 6 contracts.

Drainage ditch widening, Hardin County, Ohio

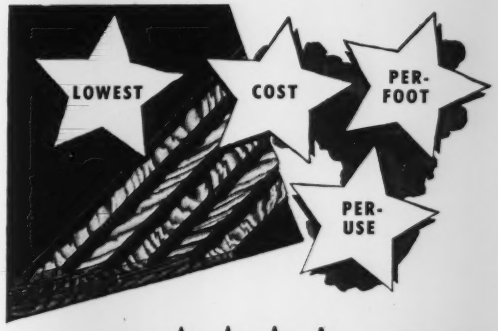
Widening a 31-mile system of 11 drainage ditches involves 399,023 cy. of earth excavation, 30,800 cy. of rock. The outlet grade is very flat, 0.032 ft. per 100 ft., approximately $\frac{1}{8}$ in., per 150 ft. Paul K. Strong is county engineer, Don W Ehlen, deputy county engineer.

Alternate lump sum bids were lower than unit price bids.

1 Young Constr. Co., & Saxton Coal Corp., Petersburg, Ind., (Contract) $143,700
2 General Dredging Co., Ft. Wayne, Ind. 174,907*
3 Paul Vargo & Son, Columbus, Ohio. 183,122

Items		Quantities	Unit Prices 1	2	3
Excav rock leveling	cy	30,803	$2.50	$2.70	$2.75
Spoil bank	cy	299,023	0.02	0.03	0.04
Excav, uncl.	cy	99,502	0.13	*	0.15
" "	cy	44,689	0.13	*	0.17
" "	cy	161,374	0.13	*	0.18
" "	cy	62,052	0.13	*	0.20
" "	cy	19,159	0.13	*	0.22
" "	cy	483	0.13	*	0.30
Clear & grub	ls	....	...	...	...

* Lump sum alternate bid is 2nd low, unit prices higher than #3



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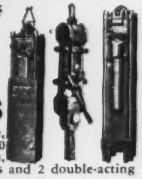

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WATER SUPPLY

LOW BIDDERS

Calif., Mendota—City, City Hall, Nov. 9, water distr. sys., from Kovick Bros. Constr. Co., 145 W. Shields Ave., Fresno. **$40,681.**

Calif., Oakland—East Bay Municipal Utility Dist., 512 16 St., Nov. 10, welded steel watermain, LS-478, from United Concrete Pipe Corp., Box 425, Baldwin Park, **$285,086.** CD 10/19.

●**Calif., San Francisco**—Public Utilities Comn., City Hall, Nov. 10, 34 mi. pipeline from Irvington Portal to Pulgas near Crystal Springs Lake, Spec. 524, from Artukovich Bros., 16200 S. Atlantic Ave., Paramount, and Steve P. Radoa, Inc., 2975 San Fernando Rd., Los Angeles, Sect. A, Schedule I, **$2,156,018;** Sect. B, Schedule III, **$4,096,996;** from Morrison-Knudsen Co. Inc., 1 Montgomery St., San Francisco, Schedule C, **$2,302,355.** CD 10/5.

CONTRACTS AWARDED

Ala., Aliceville—City, WW imprvs., to W. R. Fairchild, Hattiesburg, Miss., **$33,256.** Bids 11/10. CD 10/25.

Ia., Des Moines—Polk Co., Courthouse 5 and Court Sts., water sys., near here, to Pittsburgh D.M. Steel Co., 10 and Murphy Sts., **$54,618.** Est. $60,000. Bids 10/25. CD 10/12.

Ky., Jenkins—Kentucky Water Co., Jenkins, exten. waterlines to Marshall Branch Coal Portal, to Tom Miller Constr. Co., London, **$44,000.** Est. $50,000. Bids 10/1. CD 9/16.

Tex., Houston—Carl C. Sharp & Assoc., 2422 Wordsworth St., c.i. waterlines, facilities. Owner builds. **$38,000.** CD 10/27.

Que., Lachute—Parish of I-Immaculee Conception, Chatham Twp., J. B. Gamache, secy., water and sewerage sys. in the mills section, to H. J. O'Connell Ltd., Canada Cement Bldg., Montreal, Approx. **$255,635.** S. Ouimet, 750 St. Gabriel St., Montreal, engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

December 13

Tex., Fort Stockton—City, sanitary sewerage sys. imprvs., extens. $60,000. Plans deposit $20. Ashley G. Classen & Assoc., 504 N. Kansas St., El Paso, engrs.

LOW BIDDERS

●**Ga., Atlanta**—City, Nov. 14, incinerator plant addn., from Standard Constr. Co., 15 11 St., Columbus, **$1,292,900.** CD 10/17.

Mo., Clayton (St. Louis 5, P. O.)—City, Miss Charlee Nledner, clk., City Hall, 10 N. Bemiston St., Nov. 8, 10,000 ft. 12- to 36-in. vitr. clay, rein.-con., etc., Davis Place Storm Relief Sewers, from W. A. Blue Co., 7820 Forsyth Blvd., **$82,944;** 7,000 ft. 12- to 36-in. vitr. clay, rein.-con. pipe, etc., Old Town Storm Relief Sewers, from Victory Constr. Co., 2240 Brentwood Blvd., Brentwood, **$71,909.** CD 1/17.

N. Y., Binghamton—Bd. Contract & Supply, Municipal Bldg., Nov. 9, intercepting sewer, Contr. 11C, from Stento & Sons Paving Co., 166 Conklin Ave., **$165,128.** CD 10/5.

CONTRACTS AWARDED

N. Y., Binghamton—Bd. Contract & Supply, Municipal Bldg., Contr. 5, general contract pumping station, Pennsylvania Ave., to M. A. Bongiovanni, Old Liverpool Rd., Syracuse, **$250,920.** Contr. 6, pumping equip., to Turbine Equipment Co., 75 West St., New York, **$57,111.** Bids 11/9. CD 10/5.

Tex., Houston—Carl C. Sharp & Assoc., 2422 Wordsworth St., sanitary and storm sewers, off LaPorte Rd. near Sims Bayou. Owner builds. **$70,000.** CD 10/27.

BRIDGES

BIDS ASKED

December 13

†California—U. S. Eng., 180 New Montgomery St., San Francisco, superstructure railroad bridge at Fruitvale Ave. railroad bridge, Oakland Harbor, near Oakland, Alameda Co., Spec. 04-203-59-28.

CONTRACTS AWARDED

●**California**—State Div. Hys., Los Angeles, 8 bridges and grading, surf. approaches, 2.6 mi. between H St. in Chula Vista and 14 St. in National City, San Diego Co., to Charles MacClosky Co., 628 Heliotrope Dr., Los Angeles, R. E. Hazard Contr. Co., 2548 Kettner Blvd., San Diego, and G. G. Willis & Sons, 2119 E. 25 St., Los Angeles, **$1,284,272.** Bids 10/27. CD 11/1, under LB.

STREETS AND ROADS

BIDS ASKED

December 15

†Wash., Brewster—U. S. Eng., 4735 E. Marginal Way, Seattle, 4, 10.4 mi. access highway to Chief Joseph Dam site under Schedule A, involving clearing, grading, ballasting, crushed stone surf. and draining and Schedule B, asph., surf. Serial No. 503-8.

LOW BIDDERS

†Idaho—Bureau P. Rds., Dpt. Commerce, 609½ Bannock St., Boise, Nov. 10, surf. and bit. plant mix 12.082 mi. Warm River-Yellowstone Hy., Proj. 34-A14, Fremont Co., from Parson & Fife Constr. Co., Box 653, Brigham City, Utah, **$196,281,** L. M. Huggins, dist. engr. CD 10/24.

New Mexico—State Hy. Dpt., Santa Fe, rejected bids Nov. 15, grading, minor drainage structures, 152.5 ft. concrete, steel bridge, watering, rolling, ballast, leveling course, etc. 9.108 mi. Route 96 between Regina and Cuba, FAP No. S-114 (1), Sandoval Co., L. B. **$305,981.** CD 11/7.

Ohio—State Hy. Dpt. Columbus, Zone 15, rejected bids Nov. 9, b. conc. wid'n. and resurf., construct 2 concrete slab bridges, Bridges No. SC-139-46, and SC-139-48, S. R. 139, Scioto Co. est. **$118,850;** cancelled bids to have been opened Nov. 9, hot-mixed, hot-laid b. conc. on waterbound macad. 1.975 mi. C. R. No. 10, Lucas Co., paving 2.529 mi. U. S. R. 224, Ashland and Medina Counties. CD 10/26.

●**Pennsylvania**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, Nov. 15, structures and grading, drainage and paving 1,835 ft. Sect. 31G, Western Exten., Pennsylvania Turnpike from point approx. 50 ft. west of L. R. 629 in N. Huntingdon Twp. easterly to point approx. 25 ft. west of LR 64013 in Hempfield Twp., Westmoreland Co., from Latrobe Road Constr. Co., Inc., Latrobe, **$1,422,** 851. CD 10/26.

CONTRACTS AWARDED

●**New Mexico**—State Hy. Dpt., Santa Fe, bit. top course surf., asph. sealing and stone chips, 5 multiple concrete box culverts over 20 ft. clear span, etc. 7.482 mi. U. S. Hy Route No. 62-180, FAP No. F-S3 (6), Eddy Co., to Skousen-Hise Contr. Co., 207 Springer Bldg., Albuquerque, **$262,134*****asph. processed base bit. top course surf. etc. 20.363 mi. Hy Route 330, between Elida and Floyd, FAP No. S-150 (1), Roosevelt Co., to D. D. Skousen, 201 Springer Bldg., Albuquerque, **$239,414*****asph processed base, bit. top course surf., misc. constr. one multiple concrete box culvert 68.37 ft. long, 4.951 mi. Hy. Route No. 333 between Central and Hanover, FAP No. S-154 (1), Grant Co. to O. D. Cowart, Box 94, Lordsburg, **$220,991***** asph. processed base bit. top course surf. asph. and stone chips sealing, etc. 14,696 mi. Hy. Route 18 between Hobbs and Jal, FAP No. S-237 (4), and asph. processed base, bit. top course surf. asph. and stone chips sealing, etc. 14.451 mi. U. S. Hy. Route No. 62-180 between Carlsbad and Hobbs and between Hobbs and the Texas-New Mexico-State Line, FAP No. F-187 (2) and F-187 (3), both Lea Co., to Wylie Bros., 1711 E. Coal Ave., Albuquerque, **$321,717** and **$377,594** respectively. Grand total $1,421,859. Bids 11/15. CD 11/7.

●**Ohio**—State Hy. Dpt., Columbus, Zone 15, 6 conc.-hot mixed, hot laid b. conc. and constructing concrete rigid frame bridge at Station 16 plus 50 and concrete rigid frame bridge at Station 66 plus 30.1, C. R. 39, Cuyahoga Co., to The Horvitz Co., 913 Midland Bldg., Cleveland, **$385,172** est. **$468,100*****wid'n., waterbound macad. and b. conc. surf., concrete steel beam bridge with concrete deck, with new concrete piers and concrete caps, and stone masonry extens. to wings of existing abutments, Morse Rd. Bridge over Alum Creek, 0.79 mi. C. R. 17, Franklin Co., to Howard Phillips, Inc., 3398 Sullivant Ave., Columbus, **$100,678** est. $117,750***b. conc. resurf., wid'n., 4.647 mi. U. S. R. 23, Franklin Co., to Robert J. Dunst & Son, 297 S. High St., Columbus, **$155,800** est. $211,870***b. conc., paving, wid'n. resurf. 2.458 mi. U. S. R. 6, Geauga Co., to The Koski Constr. Co., National Bank Bldg., Ashtabula, **$90,223** est. $92,000***bit. road mix on waterbound macad. paving and construct continuous concrete slab bridge and concrete substructure Bridge No. MA-38-93, 0.321 mi. S. R. 38, Madison Co., to McNamara & Kline, Route 4, Delaware, **$52,518** est. $77,980*** b. conc. paving, resurf. 0.321 mi. S. R. 48, Montgomery Co., to Boyd & Cook Co., 801 Gas and Electric Bldg., Dayton, **$53,858** est. $52,000***b. conc. paving and construct continuous steel beam bridge with concrete deck and substructure, Bridge No. PI-104-89, 1.742 mi. S. R. 104, Pickaway Co., to John Hill Contg. Co., 491 Lexington Ave., Mansfield, **$202,178** est. $266,760. Grand total **$1,040,427.** Bids 11/9.

Tex., Houston—Carl C. Sharp & Assoc., 2422 Wordsworth St., street constr. and asph. paving, off LaPorte Rd. near Simms Bayou. Owner builds. Approx. **$75,000.** CD 10/27.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
● Project of $1,000,000 or over.
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

EARTHWORK, WATERWAYS

BIDS ASKED

December 28

†Washington—U. S. Eng., 4735 E. Marginal Way, Seattle Zone 4, buildings to house administrative and recreational facilities at Mud Mountain Dam.

LOW BIDDERS

†California—U. S. Eng., Wright Bldg., Sacramento, Nov. 10, levee setback and bank protection along Sacramento River at Moons Bend, Sacramento Co., from Lentz Constr. Co., 2416 Sutterville Rd., Sacramento, **$185,399.** CD 11/1.

†Mississippi—U. S. Eng., P. O. Box 1169, Mobile, Ala., Nov. 4, dredging, Gulfport Harbor, CIVENG 01-076-50-24 from Standard Dredging Corp. of New Orleans, 1402 Whitney Bank Bldg., New Orleans, La., **$323,663.** CD 10/11.

CONTRACTS AWARDED

●**†Kentucky**—U. S. Eng., 303 U. S. Court House, Nashville, 1, Tenn., completing Wolf Creek Power Plant, approx. 10 mi. north of Albany, Cumberland River, Russell Co., CIVENG-40-058-50-3, to E. J. Albrecht Co., 2626 W. 26 St., Chicago 8, Ill., **$5,558,719.** Bids 10/27, awarded 11/3, CD 10/3, under LB.

Tex., Houston—Carl C. Sharp & Assoc., 2422 Wordsworth St., dirt work for 400 acre site development. Owner builds. **$35,000.** CD 10/27.

AIRPORTS AND AIRBASES

BIDS ASKED

About December 15

●**Kan., Wichita**—AIRPORT IMPRVS.—Boeing Airplane Co., Municipal Airport, airport imprvs. $1,135,000. Wilson & Co., 223 N. Santa Fe, Salina, engrs. CD 11/17.

CONTRACTS AWARDED

Que., La Malbaie—AIRPORT—Atlas Aviation Ltd., Ottawa Airport, Ottawa, Ont., civil airport at The Dunes, to W. Trudel, La Malbaie, Approx. **$125,000.**

PUBLIC BUILDINGS

BIDS ASKED

December 8

Ala., Ashland — HOSPITAL — Clay Co., Ashaland, hospital. Charles H. McCauley, Jackson Bldg., Birmingham, archt.

Miss., Clarksdale — HOUSING — Clarksdale Housing Auth., W. A. McMinn, dir., Clarksdale, 40 housing units, $300,000. Extended date. CD 9/9.

December 13

†N. Y., Peekskill—POST OFFICE—Pub Bldgs. Admin., 731 Custom House, New York, Zone 4, misc. repairs to U. S. Post Office. **FWA.**

About January 2

●Ga., Athens—SCHOOL—City, high school, $1,000,000. William J. J. Chase & Assoc., 140 Peachtree St., Atlanta, archts. CD 5/13.

Miss., Greenville — COURTHOUSE, etc. — Washington Co., Greenville, courthouse and jail, $500,000. Spain & Biggers, Dpt. Guaranty Bank Bldg., Jackson, archts.

LOW BIDDERS

Calif., Chico—MUSIC, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, Nov. 10, general contract, 2 story rein.-con. music, speech and science bldg. at Chico State College, from B. & R. Constr. Co., 110 Market St., San Francisco. **$397,405.** CD 10/11.

Ill., Anna—HOSPITAL MODERNIZATION —Dpt. P. Welfare, Executive Office, Springfield, Nov. 8, general contract main bldg. rehabilitation, modernization at Anna State Hospital, from Lloyds Builders, Inc., 61 W. Superior St., Chicago. **$920,740.** CD 11/3.

Ill., DeKalb—LIBRARY—State of Illinois, Bldg., Springfield, Nov. 8, general contract library at Northern Illinois State Teachers College, from Federal Constructors, Inc., 173 W. Madison St., Chicago, Zone 2. **$974,000.** CD 11/1.

Miss., University — DORMITORY — State Bldg. Comn., New Capitol Bldg., Jackson, rejected bids Nov. 1, girls dormitory. L. B. **$294,213.** CD 11/14, under LB.

CONTRACTS AWARDED

Ill., Sheridan—BUILDINGS—State of Illinois, Dpt. P. Welfare, Springfield, general contract 5 bldgs., Illinois State Reformatory, to Mayfair Constr. Co., 5660 N. Kedzie Ave., Chicago, Zone 5, **$934,000.** Bids 10/18, awarded 11/14. CD 10/24, under LB.

R. I., North Kingstown—HIGH SCHOOL—Town, H. A. Davis, supt. Schools, Town Hall, general contract 3 story, bsmnt., brick, stone, steel high school, to Westcott Constr. Co., 42 Weybosset St., Providence. **$276,676.** Bids 10/18. Howe, Prout & Ekman, 1016 Turkes Head Bldg., Providence, archts.

COMMERCIAL BUILDINGS

SOON LETS CONTRACT

Miss., Jackson — COMMERCIAL — Capitol Floral Co., c/o N. W. Overstreet & Assoc., archts., 201 N. Lamar St., soon lets contract 4 story, bsmnt., 30x176 ft. commercial bldg. addn.

Tex., Dallas—SCHOOL, etc.—Ursuline Academy, c/o Rev. Mother Margaret Mary, 1330 St. Joseph St., soon lets contract school $350,000; monastery, $250,000. Smith & Mills, Mercantile Bank Bldg., archts. Zumwalt & Vinther, Mercantile Bank Bldg., engrs. CD 10/17.

CONTRACTS AWARDED

Calif., Emeryville — OFFICE WING — Shell Development Co., 4560 Horton Ave., 4 story L-shaped 33,000 sq. ft., rein.-con. office wing, to Christensen & Lyons, 3544 Harlan St., Oakland. Approx. **$250,000.** Roy A. Lippincott, 627 Carondolet St., Los Angeles, archt. CD 3/22/46.

Calif., San Rafael — RESIDENCES — R. E. Nolan Co., 202 Sir Francis Drake Blvd., San Anselmo, 23 three-bedroom residences in Meadow Glen subdivision. Owner builds. **$250,000.** CD 5/13.

●Calif., Watsonville—RESIDENCES— Pajaro Valley Development Co., 465 Main St., 132 residences, to Manuel S. Bernardo, 1117 B Main St., **$1,000,000.**

Conn., New Haven—APARTMENTS—Charlotte Labov, c/o Harry Labov, archt., 201 Front St., 35 three story, bsmnt., brick, steel apartments, Prospect St., to Harlaco, Inc., 201 Front St., **$250,000.** CD 11/17.

Conn., New Haven — APARTMENT — Normandy Apartments, Inc., Front St., 80 family unit 3 and 6 story brick, steel apartment, Division St., to Harlaco, Inc., 201 Front St., New Haven. Approx. **$300,000.** CD 11/15.

Conn., Vernon—HOUSING—Moderate Homes, Inc., Vernon Center, 35 frame homes, sewage and artesian water sys., Route 30. Owner builds. **$315,000.** CD 11/17.

Fla., Miami — APARTMENT DEVELOPMENT — Florence S. Markowitz, c/o Gerard Pitt, archt., Congress Bldg., Miami, apartment development, N. W. 71 St. and 14 Ave. Owner builds. Approx. **$300,000.**

Ga., Augusta — DEPARTMENT STORE — Silver's Five & Ten Cent Store, c/o contractor, department store, to Clarence Mobley Constr. Co., Augusta. Approx. **$500,000.**

●Kan., Kansas City — HOTEL — Wyandotte Hotel Co., 3552 Wood St., 14 story, bsmnt., rein.-con., brick, stone, terre cotta hotel, to Swenson Constr. Co., 3305 Terrace St., Kansas City, Mo., **$2,035,856.** Bids 10/12. CD 10/26, under LB.

Md., Silver Spring—SCHOOL—Academy of the Holy Names, Silver Spring, 2 story, 60x100x100 ft., brick, cinder block, limestone school, Hawley Rd., to Tuckman-Barbee Constr. Co., 1720 H St. N. W., Wash., D. C., **$251,112.** Murphy & Locroft, 1618 P St. N. W., Wash., D. C., archts.

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Mass., Springfield—HOUSING—A. J. Boyer, 25 Geneva St., 50 houses, Catalpa Terrace, to R. L. Bellame, 306 Rowley St., Agawam. Approx. **$250,000.** R. J. Roy, 47 Bradford St., archt.

Mass., Springfield — CHURCH — Springfield R. C. Diocese, Holy Cross Parish, 1 story, bsmnt., brick, stone church, Plumtree Rd., to E. W. Larkin Co., 1242 Main St., **$250,000.** Wendell T. Phillips, 98 Congress St., Milford, archt.

Neb., Omaha — CHURCH — Augustana Lutheran Church, c/o contractor, church, to Borchman & Sons, 4601 Douglas St. Approx. **$275,000.**

N. C., Gastonia — APARTMENT — Eastover Apartments, Inc., c/o contractor, 100 apartment units, to C. D. Spangler Constr. Co., 1933 S. Blvd., Charlotte. Approx. **$600,000.**

N. C., Salisbury — APARTMENT — W. H. Weaver Constr. Co., Greensboro, apartment development. Owner builds. Approx. **$250,000.**

Man., St. James—HOUSING—F. Lount & Son, 1000 Lynn Ave., Winnipeg, housing development on Lord Strathcona Estate. Owner builds. **$500,000.** CD 4/15/46.

INDUSTRIAL BUILDINGS

SOON LETS CONTRACT

Mo., St Joseph—GARAGE, etc.—Hill Motor Co., St. Joseph, soon lets contract garage and service bldg. **$100,000,** Eckel & Aldrich, Corby Bldg., archts.

Ore., Portland — WAREHOUSE — Pacific Northwest Ford Tractor Co., N. W. 29 and Industrial Sts., soon lets contract 44,000 sq. ft., 170x220 ft. rein.-con. warehouse, N. W. 29 and Industrial Sts. Richard Sundeleaf, Spalding Bldg., archt.

Tenn., Fayetteville — WAREHOUSE, etc. — Lincoln County Electric Membership Corp., Fayetteville, soon lets contract warehouse and office. Plans deposit $100. Hart & McBryde, Cotton States Bldg., Nashville, archts.

Wis., Milwaukee — WAREHOUSE, etc. — Argonaut Realty Div., General Motors Corp., 304 General Motors Research Bldg. A, Detroit, Mich., soon lets contract 1 and 2 story, 162x300 ft., Brick, concrete block warehouse and office, concrete fdn and floors.

Ont., Toronto—PLANT—Brown, Murray & Elton, archts., Confederation Life Bldg., Toronto, soon lets contract 2 story, 40x70 ft., steel, concrete block, plant addn., 1789 Yonge St., for Sampson Matthews Ltd., 1189 Yonge St. Approx. $110,000.

LOW BIDDERS

Ark., Little Rock—WAREHOUSE—S. J. Beauchamp, c/o low bidder, warehouse, from L. H. Knight, 112½ E. 7 St., **$309,959.**

Ark., Magnolia — PLANT — Magnolia Ice & Coca Cola Bottling Co., Magnolia, Nov. 8, bottling plant, from Elmer D. Thomas, Magnolia, **$83,438.** CD 11/2.

CONTRACTS AWARDED

Ore., Cascade Locks — PLANT — Columbia Electro-Chemical Phosphate Co., Cascade Locks, phosphate mfg. plant, force account, **$400,000.** Awarded 11/10. Galvin Wolfe, Cascade Locks, engr.

Tenn., Nashville—PLANT—General Products Corp., Craighead St., plant addn., to C. F. Rule & Co., 217 13 Ave. N. Approx. **$75,000.**

Tex., Houston—WAREHOUSE—Select Wines Co., Inc., 1116 Hemphill St., 1 story, 100x100 ft., steel warehouse, concrete beam fdn., to J. J. Liebermann & Son, 448 Live Oak St., Approx. **$80,000.** Stanley Malowitz, 4708 Caroline St., engr. CD 1/10.

Tex., Houston—WAREHOUSE—Ship Channel Compress Co., 417 La Brench St., warehouse, own forces. Approx. **$75,000.**

Tex., Houston — SITE IMPROVS. — Southwestern Mchy. & Equipment Co., 119 Main St., street constr. and asph. paving, **$55,000;** sanitary sewers, **$50,000,** own forces. CD 5/27/48.

Tex., Houston — PLANT — Standco Bolt, Brake Lining & Supply Co., 2701 Clinton Dr., reconstruct plant, own forces. Approx. **$80,000.** CD 9/13/45.

Wis., Kaukauna—WAREHOUSE—Thilamany Pulp & Paper Co., Kaukauna, 1 story, 50x200 ft., steel, concrete block warehouse addn., concrete fdn. and floor, to Permanent Constr. Co., 4100 N. 3 St., Milwaukee, Zone 12.

Wis., Pewaukee—FOUNDRY—L. J. Marks, 2354 S. 6 St., West Allis, Zone 14, 1 story, 72x140 ft., concrete block, steel foundry concrete fdn. and floor. Owner builds. John Topzant, 424 E. Wells St., Milwaukee, Zone 2, archt.

Ont., Barrie—FACTORY—Canadian General Electric Co., Ltd., 212 King St. W., Toronto, 1 story, 75x300 ft., steel, masonry factory addn., to Carter Constr. Co. Ltd., 419 Cherry St., Toronto. Approx. **$450,000.** Bids 11/4. CD 10/28.

UNCLASSIFIED

BIDS ASKED

December 8

Ill., Chicago — FIELD HOUSE — Chicago Park Dist., 425 E. 14 St., Zone 5, 2 story, 80,000 sq. ft. field house for Loyola Public Park, Sheridan Rd. and Greenleaf Ave. $800,000. Ralph H. Burke, 20 N. Wacker Dr., Zone 6, engr. CD 6/11/45.

December 9

Iowa—DAM—Corn Belt Power Co-operatives, Humboldt, Sect. 5, rein.-con. dam and abutment walls, Humboldt, Stanley Eng. Co., Hershey Bldg., Muscatine, engr. CD 12/1/48.

LOW BIDDERS

Calif., San Francisco—TROLLEY COACH CONNECTION—Public Utilities Comn., City Hall, Nov. 9, trolley coach connection, Sutter St., Presidio Ave., California St., Spec. 342, from Severin Electric Co., 249 Natoma St., **$64,835.** CD 11/1.

Texas—RURAL DISTRIBUTION LINES—Comanche County Electric Co-operative, Comanche, 248 mi. rural distr. lines, Brown, Eastland, Comanche, and Callahan Counties, from B-Line Constr. Co., 520 1st Natl. Bank Bldg., Oklahoma City, Okla., **$243,729.** CD 11/2.

CONTRACTS AWARDED

Ark., Russellville—DRIVE-IN THEATER—William L. Spicer, Ft. Smith, drive-in theater, Owner builds. **$50,000.**

●†**California**—STEEL TOWERS—Bureau Reclamation, Box 2511, Sacramento, steel towers for 239 kv transmission lines, Shasta-Tracy West Side Lines, double circuit steel towers for Central Valley Proj. Spec. R-2-74, Shasta Co., etc., to Bethlehem Pacific Coast Steel Corp., 20 and Illinois Sts., San Francisco, **$1,844,414.** Bids 10/18. CD 10/25, under LB.

†**California**—TRANSMISSION LINES—Bureau Reclamation, Elverta, two 230 kv transmission lines from Perkins to Tracy & Oroville to Elverta, Central Valley Proj., Butte and San Joaquin Counties, etc., Spec. 2781, Schedule I, to Murlack Co., Inc., 2277 Jerrold Ave., San Francisco, **$434,163;** Schedule II, to Barrett & Hilp, 918 Harrison St., San Francisco, **$113,956.** Bids 11/7. CD 10/12, under LB.

Fla., Miami — DRIVE-IN THEATER — Le Jeune Auto theater, c/o contractor, drive-in theater, to Spector & Sons, 575 S. W. 22 Ave., Approx. **$60,000.** Bids 12/26. CD 10/24.

Idaho, Blackfoot—HOSPITAL TUNNELS—State Bd. Examiners, Boise, tunnels and misc. utilities, State Hospital South, to Chytraus Bros., Idaho Falls, **$68,200.**

●**Tex., Houston**—FIELD HOUSE, etc.—Rice Institute, M. Esperson Bldg., Unit 1, general contract field house and gymnasium, to J. M. Odom, P. O. Box 774, Austin, Approx. **$1,000,000.** Bids 9/15. CD 11/18, under LB.

●**Wisconsin**—GAS PIPELINE—Michigan-Wisconsin Pipe Line Co., 704 Michigan Bldg., Detroit, Mich., 184 mi. 4- to 14-in. gas pipeline from Waukesha to Green Bay and branch lines to Sheboygan, Manitowoc and Two Rivers, to G. G. Griffis Constr. Co., 1225 W. 3 St., Tulsa, Okla., **$1,196,000.** Ford, Bacon & Davis, 1330 Grand Ave., Kansas City, 6, Mo., engrs. CD 11/9.

Wis., Wisconsin Rapids—STADIUM—City, 2000 seat concrete, steel stadium, day labor. **$50,000.**

Ont., Toronto — BLEACHERS, etc. — Bd. Educ., 155 College St., bleachers and grading playing field at Lawrence Park Collegiate, to Fried Constr. Co., Ltd., 70 Victoria St., **$70,841.** C. E. C. Dyson, c/o owner, archt.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Lakeport—City, City Hall, defeated **$100,000** bonds water sys. CD 10/18.

●**Calif., San Francisco**—Public Utilities Comn., City Hall, voted **$4,000,000** bonds, Cherry Valley Dam, Tuolumne Co., etc. CD 9/20.

●**Calif., San Rafael**—Marin Municipal Water Dist., 847 4 St., voted $4,000,000 bonds, dam $1,600,000; filter plant $400,000; pipeline $650,000. James S. Peters, c/o owner, ch. engr. CD 9/15.

Fla., Panama City—City, city water lines and other WW imprvs., Proj. 2, **$300,000.** Smith & Gillespie, Roberts Bldg., Jacksonville, Zone 1, consult. engrs.

Md., Sykesville—State, Dpt. P. Imprvts., 200 W. Franklin St., Baltimore, Job M-H 49-08 1 m.g. daily water treatment plant and 2 m.g. pump station, for Springfield State Hospital, **$150,000.** Whitman Requardt & Assoc., 1304 St. Paul St., Baltimore, engrs. CD 2/12/48.

Mont., Havre—City, water treatment plant, **$415,000.** Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs.

N. C., Lincolnton—Town, voted bonds, enlarging exten. water supply sys. **$118,000.** CD 9/16.

Ore., Grants Pass—City, City Hall, voted bonds, enlarging filtration and settling plant, **$125,000.** Edward N. McKinstry, city engr.

Sask., Swift Current—Municipality, doubling size treated water reservoir, 10,000 gal. stand pipe on North Hill, 10 in. main from reservoir, installing booster pump on the flats, **$140,000.** H. W. Carss, City Hall, city engr. CD 7/20/45.

SEWERS, WASTE DISPOSAL

Ala., Fairhope—City, exten. sanitary sewers, **$200,000.** J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, consult. engr.

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, 5.22 mi. 8- to 12-in. sanitary sewers in Garvalia Ave., Garvey, C. I. 1257, **$113,750.** C. E. Arnold, co. engr.

Calif., Merced—City, City Hall, voted **$250,000** bonds, sewage treatment plant. G. E. Winton, city engr. CD 10/5.

Calif., Pittsburg — City, City Hall, voted **$650,000** bonds, sewage treatment plant. Clyde C. Kennedy, 604 Mission St., San Francisco, consult. engr. CD 10/5.

Calif., West Sacramento—West Sacramento Sanitary Dist., Jefferson Blvd., voted **$125,000** bonds, sewage treatment works. CD 10/5.

●**Fla., Panama City**—City, complete new city wide sewerage sys. incl. treatment plant, Proj. 1, **$3,200,000.** Smith & Gillespie, Roberts Bldg., Jacksonville, Zone 1, consult. engrs. CD 11/22/44.

●**Ill., Champaign**—City, 917 S. University Ave., storm drainage **$3,000,000,** Horner & Shifrin, 1221 Locust St., St. Louis, Mo., engrs.

Ill., Hazel Crest — Village, Village Hall, sanitary sewers for eastern section of village, **$150,000.** Mulford Eng. Service, 1541 Chicago Rd., Chicago Heights, engr. CD 4/8/46.

La., Alexandria—City, City Hall, voted bonds sanitary sewers, **$500,000.**

Mass., North Attleboro—Town Bd. Selectmen, Town Hall, sewer main from Jefferson St. into Coral Lake section, **$100,000.**

Minn., New Brighton—Village, D. C. Searles, mayor, **$140,000** bond election Dec. 6, sanitary sewer extens. connecting sewerage sys. with sewer between Minneapolis and Twin Cities Arsenal, near here. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, archts. CD 7/23/46.

Minn., Winona—City, R. G. Wildgrube, recdr., plans by Greeley & Hansen, 220 S. State St., Chicago, Ill., sewage treatment facilities, (1) plans under consideration—(1) enlargement municipal treatment plant and minor changes for treating domestic sewage only, **$119,000.** (2) Plan 1 plus expansion to treat industrial sewage from local packing plant, **$205,000.**

Pa., Aliquippa—Jones & Laughlin Steel Corp., 3 and Ross Sts., Pittsburgh, industrial waste treatment plant, **$150,000.**

Pa., Trafford—Trafford Boro, Boro Bldg., sewage disposal plant and intercepting sewer, **$413,400.** Chester Engineers, 210 E. Parkway, N. S. Pittsburgh, consult. engrs. CD 11/11/45.

Wash., Kittitas—City, City Hall, bond election Dec. 8, drainage and sanitary sewage sys. and treatment plant, **$125,113.** G. D. Hall, Larson Bldg., Yakima, consult. engr. CD 4/2/46.

●**B. C., Saanich**—Municipality, Municipal Hall, sewerage sys. **$1,700,000.**, H. D. Dawson, Municipal Hall, Royal Oak, engr. CD 7/19/46.

BRIDGES

Ia., Marshalltown—Great Western Railway Co., J. W. Dudgeon, ch. engr. Terminal Annex, Denver 17, Colo., and Chicago & Northwestern R. R. Co., E. C. Vandenburg, ch. engr., 400 W. Madison St., Chicago 6, Ill., viaduct, Center St. **$700,000.**

North Carolina—State Hy. and P. Wks. Comn., Raleigh,

Dare Co.—4,700 ft., steel truss, swing span bridge over Roanoke Sound on U. S. 158 between Nags Head and Manteo, Proj. 1222. Approx. $500,000. T. B. Gunter, Jr., c/o owner, bridge engr.

Tex., San Antonio—City, Jimmie Knight, street comr., City Hall, Military Plaza, bond election Dec. 8, bridge constr. (due to expressway) **$200,000;** 7 St. concrete, steel bridge over San Antonio River, **$100,000.** W. W. Toxey, city engr. CD 10/2/45.

Que., Maniwaki—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., 210 ft. rein.-con. bridge, replacing present structure over Pickanock River. Approx. **$150,000.** O. Desjardines, c/o owner, engr.

STREETS AND ROADS

Calif., Los Angeles—Los Angeles Co., Hall of Records, curbs, walks, gutters in 172 St., **$75,200;** Mausel Ave., **$81,400;** Condon Ave., **$90,400;** 164 St., **$79,500;** 159 St., **$103,200;** and 168 St., **$97,800,** all foregoing in Lawndale C. E. Arnold, co. engr.

Calif., Los Angeles—Los Angeles Bd. Educ., 1425 S. San Pedro St., plans by G. M. and R. M. Lindsey, 6311 N. Figueroa St., street imprvs. at East Los Angeles Junior College, East Los Angeles, **$125,000.**

La., Alexandria — City, City Hall, voted bonds street constr. and paving, **$500,000.** CD 8/21/44.

Tex., Dallas—Dallas Co., Courthouse, bond election Dec. 8, farm-to-market road constr., 25 mi. Precinct 1, **$176,250;** 20 mi. Precinct 2, **$141,000;** 18 mi. Precinct 3, **$126,900;** 27 mi. road Precinct 4, **$190,350.** H. Klinger, co. engr. CD 5/16.

Tex., Hallettsville — Lavaca County Road Dist. 17, Hallettsville, road imprvs., exten. grading, surf. **$110,000.**

●**Tex., Kaufman**—Kaufman Co., Courthouse, voted bonds, farm-to-market roads, 25 mi. Precinct 1, **$250,000;** 36 mi. Precinct 2, **$360,000;** 38 mi. Precinct 3, **$380,000;** 26 mi. Precinct 4, **$260,000.** CD 10/19.

Wash., Longview—City, City Hall, paving 3 Ave. from Washington to Ferry Sts. and over Ferry St. to intersection with California Way in L. I. D. 35. **$150,000.** J. Jones, city engr.

Que., Quebec City—City, F. X. Chounard, clk., wld'n. Dorchester St., Approx. **$600,000.** E. Hamel, c/o owner, engr.

EARTHWORK, WATERWAYS

●**La., Alexandria**—City, City Hall, drainage **$1,000,000.** CD 11/22/44.

Tex., Dayton—Liberty County Water Control & Imprvt. Dist. 1, Dayton, drainage sys. **$150,000** bonds voted.

Tex., Houston—City, City Hall, 900 Brazos St., 35 mi. Sims Bayou Flood Prevention Proj. **$500,000.** R. J. Putney, Courthouse, flood engr.

Tex., Refugio—Refugio Co. Drainage Dist. 1, Refugio, drainage proj., 40,000 acres in vicinity Austwell and Tivoli, Precinct 4. **$250,000** bonds voted. Frank T. Drought, 117 W. Pecan St., San Antonio, consult. engr.

Tex., San Antonio—City, Jimmie Knight, comr. Streets, City Hall, Military Plaza, flood control projects, on Rockwood Creek in S. Presa-Riverside area, **$150,000;** in Nogalitos-Commerce Sts. area, **$123,000.** W. W. Toxey, city engr.

AIRPORTS AND AIRBASES

●**Calif., San Francisco**—AIRPORT BLDGS.—Public Utilities Comn., City Hall, voted $10,000,000 bonds terminal, bldg., runway extens., etc., at Mills Field, San Francisco Airport, near San Bruno, **$4,000,000.** W. P. Day & Assoc., 111 New Montgomery St., archts. CD 10/11.

●**Kan., Wichita**—AIRPORT—Boeing Airplane Co., Wichita, airport construction at Municipal Airport, **$1,135,000.** Wilson & Co., 223 N. Santa Fe St., Salina, engrs.

Mass., Fall River — ADMINISTRATION BLDG.—City of Fall River Airport Comn., administration bldg. at Municipal Airport, **$200,000.** Fay, Spofford & Thorndike, 11 Beacon St., Boston, engrs.

Mass., New Bedford — ADMINISTRATION BLDG.—City of New Bedford Airport Comn., administration bldg., Municipal Airport, **$250,000.** Fay, Spofford & Thorndike, 11 Beacon St., Boston, engrs.

Tex., Lamesa — AIRPORT — Dawson Co., Courthouse Bldg., voted $105,000 bonds airport. **$210,000.** CD 10/24.

LATIN AMERICA

Mexico, Alto Lerma—Nueva Cia Electrica de Chapala, S. A. Jose J. Farell, genl. mgr., Guadalajara, Jal., plans electric power plant. **$400,000.**

Mexico, Casas Grandes—Empacadora de Casas Grandes, c/o Gen. Rodrigo Quevedo Moreno, Prado Norte, 345 Mexico, D.F., plans meat packinghouse and refrigeration plant. **$400,000.**

Mexico, Ciudad Delicias — Mexican Govt., Sria. de R. H. Balderas, 94, Mexico, D. F., Mexico, plans irrigation works, featuring dam fertilizing 67,500 acres. **$2,250,000.**

Mexico, Saltillo—Nacional Financiera, V Carranza, 25, Mexico, D. F., Mexico, plans iron and steel works. **$5,000,000.**

Mexico, San Luis Potosi—Diamond T. Truck Corp., 320 S. Sangamon St., Chicago, Ill. U. S. A., plans truck assembly plant. **$500,000.**

Mexico, San Nicolas—Mexican Govt., S. de R. H. Balderas, 94, Mexico, D. F., plans irrigation dam on Gauchpin River, storing 2,500,000 cu. mtrs. of water. **$500,000.**

Mexico, Tampico—Petroleos Mexicanos, Juarez, 104, Mexico, D. F., Mexico, plans shipyard. **$23,000,000.**

PUBLIC BUILDINGS

Calif., Cuyama—SCHOOL—Cuyama School Dist., plans by Ernest McCoy, Hay Bldg., Bakersfield, 10 classroom unit, administration, lunch room and assembly bldgs. **$250,000** Donald F. Shugart, 35 N. Raymond St., Pasadena, consult. engr.

●**Calif., Hayward**—HOSPITAL—Eden Hospital Dist., Hayward, voted **$1,123,000** bonds, 118-bed hospital, at Eden, near here. **$2,600,000.** Douglas D. Stone & Lou B. Mulloy, 619 California St., San Francisco, archts. Garthorne, Boßnaccorsi & Murray, 1095 Market St., San Francisco, consult. engrs. CD 10/25.

●**Calif., Lompoc** — SCHOOLS — City School Dist., bond election Dec. 9, **$535,000** school; **$640,000** high school. Daniel, Marin & Johnson, 672 S. La Fayette Park Pl., Los Angeles, archts.

●**Calif., Los Angeles**—HOSPITAL—Los Angeles Co., 501 Hall of Records, voted **$4,500,000** bonds, contagious disease hospital. Paul R. Williams & Adrian Wilson, 3757 Wilshire Blvd., archts. CD 10/13.

Calif., Richmond—HOSPITAL—City, City Hall, voted **$845,000 bonds**, 100 bed hospital. CD 9/23.

Calif., Turlock — GYMNASIUM — Turlock High School Dist., Turlock, plans by Mayo & Johnson, Exchange Bldg., Stockton, rein.-con. gymnasium at Turlock High School. **$300,000.**

●**Calif., Whittier**—HIGH SCHOOL—Whittier Union High School Dist., 610 W. Philadelphia St., plans by William H. Harrison, 816 W. 5 St., Los Angeles, high school, South Passons Blvd. **$2,500,000.**

●**Conn., Hartford**—SCHOOL—City, Bd. Educ., 249 High St., plans by Ebbets Frid & Prentice, 862 Asylum Ave., brick, steel school, Lyme St., **$1,040,000;** plans by Malmfeldt Assoc., 36 Pearl St., Hartford brick, steel school, Sherbrooke Ave., **$2,325,000.** CD 9/27.

Del., Delmar—RESIDENTIAL DEVELOPMENT—Chamber of Commerce of Delmar, residential development, **$250,000.**

Fla., Tallahassee—HOUSING—Florida State University, Tallahassee, housing units. **$320,000.**

Ga., Cedartown — HOUSING — Cedartown Housing Auth., Cedartown, 100 housing units. Approx. **$250,000.**

●**Ill., Cicero** — HOSPITAL — Village, Town Hall, Nicholas Berkos, atty., hospital, **$3,000,000.** DeLeuw & Cather, 150 N. Wacker Dr., Chicago, Zone 6, engrs.

●**Ill., Des Plaines** — SCHOOL — Maine Twp. High School, C. Dewey Imig, pres., Dempster Rd. at Potter Rd., plans by Childs & Smith, 20 N. Wacker Dr., Chicago, Zone 6, 2 story, bsmnt., steel, brick, concrete, stone high school, near here. **$1,500,000.**

Ill., Glenview—SCHOOL—Bd. Educ., 1930 Prairie Ave., plans by Perkins & Will, 207 W. Jackson St., Chicago, Zone 6, 1 story school. **$350,000.**

Ill., Monmouth—SCHOOL—Bd. Educ., Monmouth, voted **$500,000** bonds Nov. 9, elementary school.

Ia., Eagle Rock — SCHOOLS — Bd. Educ., plans by Smith & Voorhees, East Mason Bldg., Ft. Dodge, 2 schools. **$365,000** bonds approved Nov. 1.

Kan., Olathe—SCHOOL—Bd. Educ., **$360,000** bond election Nov. 22, Central School, etc. E. M. Fuller, National Bank Bldg., Kansas City, Mo., archt. CD 10/28.

Kan., Winfield — DORMITORY — State of Kansas, Topeka, plans by Thomas & Harris, 125½ N. Topeka St., employee's dormitory at State Training School. **$275,000.** CD 9/29.

La., Cheneyville — SCHOOL — Parish School Bd., Alexandria, plans by Charles T. Roberts, Guaranty Bank Bldg., Alexandria, grammar school.

●**La., New Orleans**—STATION—Union Passenger Terminal Com., Wm. Zetsman, chn., New Orleans, plans by Victor Wogan, Joseph Bernard, Aug. Perez, Jules K. De La Vergne, Audubon Bldg., Union Passenger Station and baggage bldg. **$2,000,000.**

Mass., Chelmsford—SCHOOL—Town, Bd. Selectmen, Town Hall, plans by Arthur Englund, 97 Central St., Lowell, 2 story, brick, steel school. **$350,000.**

Mass., Taunton—HOUSING—City of Taunton Housing Auth., City Hall, 2 story, bsmnt., garden type, 40-unit housing. **$400,000.**

Minn., Duluth—SCHOOL—Bd. Educ., H. J. Forsberg, clk., 226 N. First Ave E., plans by O. M. Olsen, 508 Lonsdale Bldg., 2 story Piedmont School, Chamberlsburg Ave. and Ensign St. **$250,000.** CD 6/30/47.

Mont., Conrad—SCHOOL—Bd. Educ., Conrad, plans by F. A. Brinkman, Kalispel, school, $550,000. CD 9/5.

Neb., Alliance—SCHOOL—Bd. Educ., Alliance, defeated bonds Nov. 8, school. **$750,000.**

Neb., Omaha—SCHOOL—Bd. Educ., 3902 Davenport St., Kellom School, 24 and Paul Sts. **$500,000.**

N. M., Carlsbad—SCHOOLS—Carlsbad Independent School Dist., Carlsbad, plans by Vorhees & Standhardt, P. O. Box 568, Roswell, high school, **$400,000;** elementary school, **$250,000.** CD 6/2/48.

N. C., Asheville—HOUSING—Asheville Housing Auth., c/o Six Associates, Inc., archts., 15 Church St., 500 housing units. Approx. **$250,000.**

N. C., Mount Olive—SCHOOL—Wayne Co. Bd. Educ., W. R. Allen, chn. Bd. Goldsboro, school, on north side of present high school site. Approx. **$250,000.**

●**N. C., Wadesboro**—SCHOOLS—Anson Co. Bd. Educ., J. O. Bowman, supt., Wadesboro, $940,000 bond election Dec. 31, 2 high schools, near here; addns. and imprv. 14 grammar schools. **$1,661,500.** Charles Connelly, Builders Bldg., Charlotte, archt.

O., Groveport—SCHOOL—Bd. Educ., Madison Local School Dist., Groveport, gymnasium, auditorium and vocational school. **$550,000.**

O., Hubbard—HIGH SCHOOL—Bd. Educ., R. C. Reynolds, supt., Hubbard, voted $1,000,000 bonds, high school, W. Liberty St. and Grandview Ave. **$890,000.** CD 9/23.

Ore., Central Point—HIGH SCHOOL—Central Point School Dist., Central Point, voted bonds Nov. 7, 1 story, 346 ft. long brick faced rein.-con. high school. **$500,000.** Freeman & Hayslip, 2040 S. W. 3 St., Portland, archts.

Pa., Providence—HOUSING—Providence Housing Auth., 263 Chad Brown St., plans by Greer, Kent, Mather Cruise & Aldrich, 423 Ind. Trust Bldg., 3 story, 120-unit apartments, Codding Court Housing, Approx. **$1,250,000;** 278 unit, Admiral Terrace, Veterans Housing, Approx. **$2,750,000.**

●**S. C. Spartanburg**—HOUSING—Spartanburg Housing Auth., Spartanburg, 400 housing units. **$2,500,000.**

S. D., Watertown—SCHOOL—Bd. Educ., Watertown, voted bonds, school. **$325,000.** Hugill, Fritzel & Blatherwick, 367 Boyce Greeley Bldg., Sioux Falls, archts. CD 8/25.

Tenn., Chattanooga — HOUSING — Chattanooga Housing Auth., c/o L. A. Schmidt, Jr., engr., Chattanooga Bank Bldg., 1,200 housing units. Approx. **$250,000.** CD 10/25.

●**Tex., Austin**—CLASSROOMS—University of Texas, Austin, plans by Leon White, university archt., Mark Lemmon, consult. archt., 1210½ Main St., Dallas, and Staub & Rather, 2814 Virginia Ave., Houston, No. 1, classroom. **$1,248,000;** Nos. 2 and 3, classrooms **$1,350,000** each. CD 4/6.

Tex., Columbus—SCHOOL—Columbus Independent School Dist., Columbus, voted bonds, school. **$275,000.** Carl Stautz, W. 8 St., Austin, archt. CD 10/20.

Tex., Corpus Christi—HOSPITAL—Nueces Co., Courthouse, voted bonds tuberculosis hospital. **$450,000.** Wade, Gibson & Martin, 923 Professional Bldg., archts. J. L. Laurence, co. engr. CD 10/5.

Tex., Crockett—HOUSING—Crockett Housing Auth., O. B. Rhone, mayor, Crockett, project rejected by City Council, 100 unit low-rent housing. **$775,000.** CD 11/14.

●**Tex., Galveston**—COURTHOUSE, etc.—Galveston Co., Courthouse, bond election Dec. 10, courthouse and jail, **$2,200,000.** H. Voelcker & Assoc., 2801 San Jacinto St., Houston, and R. R. Rapp, Guaranty Bldg., archts. C. C. Washington, co. engr. CD 12/30/46.

●**Tex., Galveston**—LABORATORY—University of Texas School of Medicine, Galveston, plans by Mark Lemmon, consult. archt., 1210½ Main St., Dallas, laboratory. **$1,500,000.** Kenneth Franzheim, 2306 Crawford St., Dallas, engr. CD 11/2.

Tex., Hebbronville—SCHOOL—Jim Hogg Independent School Dist., Hebbronville, bond elec. on Dec. 6, Intermediary School, **$350,000;** masonry school addn., remodeling, **$300,000.** CD 9/29/48.

Tex., Irving—SCHOOL—Irving Independent School Dist., Irving, plans by Thomas, Jameson & Merrill, 820 N. Harwood St., Dallas, school. **$450,000.** CD 10/6.

Tex., Kountze—SCHOOL—Kountze Independent School Dist., Kountze, plans by Stanley Brown, 1905 N. Harwood St., Dallas, masonry school. **$310,000.**

Tex., Lamarque—SCHOOL—Lamarque Independent School Dist., Lamarque, plans by Wyatt C. Hedrick, engr. and archt. 5201 Fannin St., Houston, school. **$350,000-$400,000.** CD 10/28.

Tex., Llano—SCHOOL—Llano Independent School Dist., Llano, plans by Herbert E. Kellner, 406 Austin Hy., San Antonio, 18-room school. **$275,000.**

Tex., Mathis—SCHOOL—Mathis Independent School Dist., Mathis, bond election Oct. 25 deferred school. **$275,000.** New date soon. E. Kellner, 406 Austin Hy., San Antonio, archt. CD 10/4.

Tex., Merkel—SCHOOL—Merkel Independent School Dist., Merkel, plans by Don. W. Smith, Texas Bank Bldg., Sweetwater, masonry school. **$250,000.**

Tex., Midland—SCHOOL—Midland Independent School Dist., Midland, plans by Wilson & Patterson, 208 Majestic Bldg., Fort Worth, 20 room, brick exterior, concrete school, slab fdn. **$400,000.**

Tex., Pasadena—SCHOOLS—Pasadena Independent School Dist., Pasadena, voted bonds, masonry, concrete, steel school addn. **$310,000;** masonry school, **$650,000.** Alvin E. Morgan, 4605 Montrose Blvd., Houston, archts. CD 11/1.

Tex., San Antonio—SCHOOL—Harlandale Independent School Dist., c/o Wm. Spivey, W. Huff St., plans by Adams & Adams, Transit Tower, public school. **$250,000.** CD 7/7/12.

Tex., Waxahachie—HOUSING—Waxahachie Housing Auth., Waxahachie, 60 low rent housing units, (for 1st year) **$435,000;** 44 low rent housing units, (for 2nd year) **$319,000.**

Va., Falls Church—SCHOOL—Town, Junior-Senior High School, primary school, remodeling Madison School. **$700,000.** CD 9/28/44.

Va., Hopewell—HOUSING Hopewell Housing Auth., Hopewell, 75 housing units. Approx. **$250,000.**

●**Va., Petersburg**—BUILDING—State of Virginia, Richmond, building for criminal patients at Central State Hospital for Negroes. **$1,062,000.** CD 12/7/44.

Wash., Chehalis—SCHOOL, etc.—School Bd., Chehalis. $100,000 bond election Dec. 10, Senior High School with shops, gymnasium and auditorium. **$624,000.**

W. Va., Buckhannon—ARMORY—W. Va. State Armory Bd., State Capitol Bldg., Charleston, plans by Carlton G. Woods, Lowndes Bldg., Clarksburg, armory. **$250,000.**

Wyo., Rawlins—SCHOOL—Rawlins School Bd., Rawlins, voted **$240,000** bonds Nov. 8. East Ward Grade School addn.

Ont., Barrie—HOSPITAL WING etc.—Barrie & District Memorial Hospital Bd., J. Mitchinson, chn., plans by Wilson & Newton, 96 Bloor St. W., Toronto, 2 story, bsmnt., 44x171 ft. 50 Royal Victoria Hospital wing and nurses residence, Approx. **$475,000.** CD 6/6/47.

Ont., Guelph—HOUSES—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 50 addnl. houses, Paisey Rd. Dist., Approx. **$365,000.** A. J. E. Smith, c/o owner, engr.

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Ont., Manor Park (near Ottawa)—SCHOOL—Manor Park Public School Bd., J. C. Rutledge, secy., plans by C. Burgess, 53 Queen St., Ottawa, 1 story, concrete block, brick school, Approx. **$275,000.** CD 10/12.

COMMERCIAL BUILDINGS

Ala., Montgomery — HOUSING — Dpt. Air Force, Pentagon Bldg., Wash., D. C., 250 housing units, Maxwell Air Force Base, Allen Smith & Tillman Turner, Montgomery, Ala., sponsors subject to FHA mortgage approval.

Ariz., Chandler—HOUSING—Dpt. Air Force, Pentagon Bldg., Wash., D. C., 500 housing units, Williams Air Force Base, Rubenstein Constr. Co., Phoenix, Ariz., sponsors subject to FHA mortgage approval.

Calif., Hayward — SHOPPING CENTER — Castro Valley Shopping Center, c/o Anderson Realty Co., 7932 Castro Valley Blvd., Castron Valley, Hayward, plans by Anderson & Simmonds, 2800 Park Blvd., Oakland, shopping center, incl. 24 stores and parking area, **$300,000.**

Calif., Los Angeles—RESEARCH—University of Southern California, plans by Albert C. Martin & Assoc., 333 S. Beaudry St., 3 or 4 story, 42x140 ft. National Heart Institute Research Bldg. **$485,000.**

Calif., Stockton—RECREATION CENTER—Y.M.C.A., Channel and San Joaquin Sts., plans by E. G. Ernst, 561 E. Harding Way, Stockton and John Apton Clowdsley, Exchange Bldg., Stockton, 3 story recreation center. **$400,000.** CD 2/2/45.

Calif., Victorville — HOUSING — Dpt. Air Force, Pentagon Bldg., Wash., D. C., 650 housing units, Victorville Air Force Base, Victor Valley Housing Corp., Victorville, sponsors subject FHA mortgage approval.

Colo., Pueblo—HOUSING—Dpt. of Army, Fifth Army, 1660 E. Hyde Park Blvd., Chicago, Ill., construct, manage and finance 100 housing units at Ordnance Depot.

Ind., Fort Wayne — CHURCH — Wm. C. Rasetter, Jr., chn. Fund-Raising Campaign, First Presbyterian Church, 201 E. Washington St., church. **$500,000.**

Ind., Michigan City — SERVICE — Northern Indiana Public Service Co., 500 Broadway, Gary, plans by Hutton & Hutton, 5231 Hohman St., Hammond, 2 story, 85x160 ft. service bldg., 1 story, 50x110 ft. truck garage, 1 story, 50x110 ft. truck garage, 1 story 45x145 ft. car garage, **$500,000.**

Ia., Vinton—HOSPITAL—Virginia Gay Hospital, Vinton, plans by Wetherell & Harrison, Shops Bldg., Des Moines, hospital, **$373,000.**

La., New Orleans—OFFICE—Pan-American Life Insurance Co., Whitney Bldg., plans by Claude E. Hooten, 509 St. Ann St., office, Canal St. near Claiborne Ave.

Md., Baltimore—RECREATION BLDG., etc. —Levindale Hebrew Home & Infirmary, Belvedere and Green Spring Aves., plans by Jas. R. Edmunds, Jr., 130 W. Hamilton St., 2 story, brick, steel, stone, concrete, terrazzo recreation bldg. and dining hall **$400,000.** A. E. Forest, 518 Cathedral St., structural engr. Jas E. Posey, 10 E. Pleasant St., mech. engr.

Md., Bladensburg—APARTMENTS—Owner, c/o Frank V. Duane, archt., 1726 M St. N.W., Wash., D. C., twenty-eight 3 story, 32x86 ft. 396 unit brick, cinder block, apartments, 55 Ave. and Quincy Rd.

Md., Hagerstown—HOME—Reformed Evangelical Methodist Home, Hagerstown, plans by Jas. R. Edmunds, Jr., 130 W. Hamilton St., 3 story, brick, stone, cinder block, steel, concrete home, **$250,000.** A. E. Forest, 518 Cathedral St., Baltimore, structural engr. Egli & Gumpf, 425 St. Paul St., Baltimore, mech. engr.

Mass., Swansea—CHURCH—St. Louis DeFrance Parish, R. C. Diocese of Fall River, Bishop Cassidy, Highland Ave., Fall River, plans by Clixte Poulin, 124 Central Ave., New Bedford, 2 story, bemnt. 120 x 160 ft., frame church, Duffington St. **$250,000.**

Minn., Collegeville—ADMINISTRATION—St. John's University, Collegeville, combined administration bldg. and student residence hall. **$750,000.**

Mont., Libby — HOSPITAL — St. Johns Lutheran Hospital, Libby, plans by Austin Constr. Co., engr. and archt., 2930 4 St., Seattle, Wash., hospital **$250,000.**

Neb., Lincoln—PHYSICAL EDUCATION—Nebraska Wesleyan University, 50 and St. Paul Sts., plans by B. F. Hemphill, 138 N. 12 St., physical educ. bldg. **$260,000.**

N. J., Wildwood—APARTMENT HOUSE—William H. Bright, Inc., 340 New Jersey Ave., apartment house, Arctic Ave., **$250,000.**

N. M., Alamogordo — HOUSING — Dpt. Air Force, Pentagon Bldg., Wash., D. C., 350 housing units, Holloman Air Force Base, Spencer & Wofford, Inc., Las Cruces, sponsor subject to FHA mortgage approval.

N. Y., Brooklyn — HOUSES — Bay 47 St. Holding Corp., 285 Grand St., New York, Zone 2, plans by Oscar I. Silverstone, 153 Pierrepont St., Zone 2, 59 one-family houses, Bay 49 St., Bay 48 St. and Shore Parkway, **$142,500.**

N. Y., Flushing—APARTMENTS—Adolph Schock, c/o Albert E. Schaefer, archt., 527 Fifth Ave., New York, Zone 17, 2 story apartment, 160 St. near 76 Ave.; on north and south sides 76 St. between Parsons Blvd. and 160 St.; on 160 St. between 76 Ave. and 75 Rd. **$275,000.**

N. Y., New York—APARTMENT—Joseph Chinich, N. H. Schattner & David B. Goodman, 152 W. 42 St., Zone 18, plans by H. I. Feldman, 415 Lexington Ave., Zone 17, apartment, 103-105 W. 14 St. **$300,000.**

N. Y., New York — APARTMENT — Onico Gardens, Inc., 60 E. 42 St., Zone 17, plans by Arthur Paul Hess, 40 E. 49 St., Zone 17, apartment, 1056-78 St. Nicholas Ave. **$250,000.**

Okla., Ardmore — DORMITORY — Southern Oklahoma War Veterans Hospital, c/o Paul Fesler, Ardmore, 2 story dormitory. **$341,229.**

Okla., Oklahoma City—CHURCH SANCTUARY—Westminister Presbyterian Church, 4300 N. Shartel Ave., plans by Sorey, Hill & Sorey, 815 N. W. 36 St., church sanctuary. **$400,000.**

Pa., Phila.—HOSPITAL—Frankford Hospital, Frankford and Wakeling Sts., hospital addn **$370,000.** CD 4/24/47.

Pa., Phila. — APARTMENT — Owner, c/o Beryl Price, archt., 1911 Pine St., 3 apartments 24 St. and Overbrook Ave. **$350,000.**

Pa. Upper Darby—DEPARTMENT STORE—John H. McClatchy McClatchy Bldg. plans completed by Erling H. Wenge, McClatchy Bldg., department store, 69 St. **$500,000.**

Tenn., Jefferson City—DORMITORIES—Carson-Newman College, Jefferson City, plans by Barber & McMurry, 517½ W. Church Ave., Knoxville, girls' dormitory and men's dormitory. **$250,000.**

Tex., Beeville — CHURCH AND EDUCATIONAL—First Methodist Church, Beeville, plans by Harvey P. Smith, Natl. Bank Commerce Bldg., San Antonio, hollow tile, brick church and educational bldg., concrete frame and fdn **$250,000.** CD 8/21/47.

●**Tex., Dallas**—DWELLINGS—Bailey Johnson Co., Lake June Rd., 168 dwellings in 2nd half of 3rd sect. of Pleasant Grove zone (1950), **$1,176,000.**

Tex. Dallas — HEADQUARTERS OR OFFICE—Baptist General Convention of Texas, Relief and Annuity Bd. Southern Division and Baptist Foundation of Texas, 1705 Pacific St., plans by John B. Danna, 2618 Cedar Springs St., 4 story, basmt., 76x140 ft. headquarters or office **$550,000.** CD 5/2.

●**Tex., Dallas**—APARTMENT—Edward Dicker, Magnolia Bldg., plans by George N. Marble & R. M. Strode, 3908 Capitol St., 12 story, bsmnt. apartment **$1,500,000.** Jacob Feld, 60 E. 23 St., New York, N. Y., structural engr. Herman Blum, 2912 Fairmount St., mechanical engr. CD 10/6

●**Tex., Dallas**—APARTMENT—Lewis & Lamberth, 3918 Gaston Ave., plans by George N. Marble, 3908 Capitol St., 12 story, bsmnt., masonry apartment, 2 electrical passenger elevators. **$1,500,000.**

●**Tex., Dallas**—HOSPITAL—St. Paul Hospital, 3121 Irvan St., plans by M. C. Kleuser, 2815 McKinney St., 2 wings of 5 story, 49x92 ft 53,500 sq. ft. masonry, 173 bed hospital, concrete pier and beam fdn. **$1,700,000.** B. W. Lanum, Texas Bank Bldg., consult. engr. CD 11/1/48.

Tex., Houston — APARTMENT — Homer Brown, Commerce Bldg., 2 unit, brick hollow tile apartment, concrete slab fdn., Hermann Dr **$350,000.**

●**Tex., Houston** — HOUSING — Meadowbrook Building Co., 7801 Howard Dr., housing, 200 acre site on Gulf Freeway across from Meadowbrook **$1,750,000.**

●**Tex., Houston**—DWELLINGS—Meadowbrook Building Co., 7801 Howard Dr., San Antonio, 200 dwellings, (New Sec. G-2 of Meadowbrook sub-division) **$1,500,000.**

●**Tex., Houston**—CHURCH, etc.—St. Luke's Methodist Church, 3350 Westheimer St., plans by Mark Lemmon, 1210¼ Main St., Dallas, (1st unit) church and associated bldgs., **$650,000;** (2nd unit) church and associated bldgs., **$850,000,** on 3600 blk Westheimer, 14 acre tract CD 1/7/48.

Tex., Houston—BUILDING—Southern States Investment Co., Main at Preston Sts., plans by Giesecke, Kuehne & Brooks, 121 E. 8 St., general remodeling, addn of 4th floor, air-conditioning, **$250,000.**

●**Tex., Houston**—DWELLINGS—Dow J. Zabolio & Assoc., West Bldg., 1,700 to 2,000 low cost dwellings, adjacent Industrial area. **$12,500,000.**

Tex. San Antonio — SHOPPING CENTER — R. G. Baltes, Box 672, plans by Clarence Rinard, 2015 Alamo Natl. Bldg., 90x396 ft. and 80x358 ft. masonry shopping center. **$350,000.**

Tex. San Antonio—SYNAGOGUE—Rodfei Sholom Congregation, A. Vogel, chn. Bldg. Comn. 603 E. Evergreen St., plans by Malcolm S. Simons, Aztec Bldg., brick, stone synagogue concrete, steel frame and fdn. **$250,000.** Frank Drought, 117 W. Pecan St., consult. engr.

Tex., Seguin — CHURCH — Seguin Methodist Church, Seguin, plans by Henry Steinbomer, 350 Broadway, San Antonio, masonry church, **$250,000.** J. W. Beretta Engineers, Inc., 901 Travis Bldg., San Antonio, consult engr.

Utah, Salt Lake City—APARTMENT—Ben Davis & A. H. Nielsen, Interurban Bldg., plans by Slack Winburn, 619 Beason Bldg., 6 story apartment, 130 S. 5 East St. **$750,000.**

●**Utah, Salt Lake City** — APARTMENT — Charles A. Peterson, 1330 S. 13 East St., plans by Slack Winburn, 619 Beason Bldg., 12 story ultra modern apartment, 5 East and 13 South St. **$1,200,000.**

Wash., Richland—SCHOOL,—Church of Christ the King, Richland, school. **$300,000.**

●**Wash, Seattle**—DWELLINGS—Balch & Henrikson Constr. Co., 8050 35 Ave. N.E., project abandoned 150 masonry duplex dwellings between E. 68 and 70 Sts. east of 40 Ave. N.E. **$1,500,000.** Grainger, Thomas & Baar, Arcade Bldg., Zone 1, archts. CD 11/7.

Ont., Fort William—HOTEL—Royal Edward Hotel, R. G. Wilson, mgr., 114 May St. S., plans by McIntosh & Mickelson, Associates, Radio Hall, 100 room hotel addn. Approx. **$700,000.**

Ont., Toronto—COMMUNITY CENTER, etc.—Jewish Community Center Com., 742 Spadina Ave., plans by Kaplan & Sprachman, 305 W. Dundas Sts., community center, club room, gymnasium, swimming pool, etc., Spadina Ave. **$250,000.**

Que., Quebec City—SCHOOL—Reverend Religious of St. Joseph de St. Vallier, 96 Ste. Foye Rd., domestic science school. Marquette St.

Que., Three Rivers—STORE—Schulte United Properties, Ltd. 229 Forges St., store enlargement. Forges St. Approx. **$100,000.**

INDUSTRIAL BUILDINGS

Calif., Betteravia — PLANT — Union Sugar Co., Betteravia, plant expansion and modernization of sugar beet plant. **$500,000.**

Calif., Pasadena—FACTORY, etc.—United Geophysical Co., c/o Ronald E. Coate, archt., 161 E. California St., 1 story 25,000 sq. ft., reinforced brick factory and office. Approx. **$100,000.**

Calif., Santa Clara — PLANT — Monsanto Chemical Co., 911 Western St., Seattle, Wash., mfg plant **$250,000.**

Colo., Alamosa—PLANT—Western Railway Ice Co. Henry Nadorff, mgr Alamosa, repairing ice plant **$300,000.**

Fla., Tarpon Springs — PLANT — Diamond Braid Co., 181 E. 16 St., Chicago, Ill., mfg. plant **$100,000.**

Ind., Fort Wayne — FACTORY — Capehart-Farnsworth Div., International Telephone & Telegraph Co., 67 Broadway, New York, N. Y., 1 story, 161x276 ft., brick, structural steel, concrete factory 3702 E. Pontiac St **$200,000.**

●**Ind., Gary**—PLANT—Northern Indiana Public Service Co., 500 Broadway, water filtration plant, **$5,000,000.** Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, 6, Ill. engr.

●**Ia. Ottumwa**—DEPOT, etc.—Chicago, Burlington & Quincy R. R. Co., H. R. Clarke, ch engr., 547 W. Jackson Blvd., Chicago, 6, Ill., depot and general office **$1,000,000.**

Md., Silver Spring — WAREHOUSE— Fisher Scientific Co., 711 Forbes St., Pittsburgh, Pa., plans by Rhees E. Burket, 1223 Conn. Ave. N. W., Wash., D. C., warehouse, Woodbury Dr. and Baltimore & Ohio R. R. **$200,000.**

N. Y., New York—GARAGE—F. G. S. Aysoc., 5 Beekman St., Zone 2 plans by Julius Eckman, 41 E. 42 St., Zone 17, 1 story garage, Gerard Ave. and 150 St. **$120,000.**

N. C., Rocky Mount—BAKERY—American Bakeries, Inc., Pryor Street Bldg., Atlanta, Ga., plans by Stevens & Wilkinson, 157 Luckie St. N. W., Atlanta Ga., bakery. **$300,000.**

Pa., Pittsburgh—WAREHOUSE—American Radiator & Standard Sanitary Mfg Co., Bessemer Bldg., plans by Hunting, Larsen & Dunnels, 1150 Century Bldg., 1 story, 200x350 ft., brick block warehouse, Reedsdale St. **$250,000.**

S. C., Greenwood—WAREHOUSE—Greenwood County Rural Electric Membership Corp., Greenwood, plans by Ledbetter & Earl, Anderson, warehouse and office. **$100,000.**

Tex., Beaumont—FLOATING PLANT—Gulf States Utilities Co., 362 Liberty St., generating unit. **$400,000.**

Tex. Dallas — WAREHOUSE-OFFICE — Mathew Critchlow, c/o Lucius E. O'Hannon, archt., 2610 Fairmount St., 30,000 sq. ft. concrete, steel, masonry warehouse, office, concrete beam and pier fdn., air-conditioning. **$275,000.**

Tex., Dallas—PARKING GARAGE—Lewis & Lamberth, 3918 Gaston Ave., plans by George N. Marble, 3908 Capitol St., 168 auto masonry underground parking garage, adjacent to 14 story apartment, between Gillespie and Dixon Sts. **$175,000.**

Tex., Dallas—PLANT—Wamix, Inc., 4839 Bengal St., cement concrete mixing plant, 3 acre tract, Trinity Industrial Dist **$100,000.**

Tex., Houston—PLANT—Dresser Industries, Inc., Terminal Tower, Cleveland, O., oil field mud supply plant imprvs., expans **$100,000.**

Tex., Houston—PLANT—Houston Oxygen Co., Inc., 5611 Clinton Dr., oxygen plant, 7½ acre tract, purchased at Long Point Rd. and Southern Pacific Ry. tracks. **$250,000.**

●**Tex., Houston**—WIRE MILL, etc.—Sheffield Steel of Texas, Industrial Rd., revising plans, wire mill, **$1,650,000;** warehouse for steel mill products, **$750,000.** Bids received. CD 7/6.

Tex., Houston—PLANT—United Creosoting Co., 1704 Oliver St., creosoting plant, 66½ acres adjacent Industrial area. Approx. **$500,000.**

Tex., Port Arthur—PLANT—Harry Swan & Assoc., Port Arthur, Menhaden Plant (fish). **$150,000.**

Tex., San Antonio—WAREHOUSE—H. E. Butt Grocery Co., Robstown Rd., Corpus Christi, 1,000 sq. ft. masonry warehouse, containing cold storage and offices, 14 acre tract, Frio City Rd. **$600,000.** W. E. Simpson Co., Milam Bldg., consult. engrs.

Tex., San Antonio—TECHNICAL and RESEARCH PROJECT—Southwest Research Institute, 8500 Culebra Rd., plans by Ford & Rogers, Route 7, Willow Way, (1st unit) technical and research project. **$100,000.**

Wash., Spokane—TERMINAL—West Coast Fast Freight, 650 Hanford St., Seattle, freight terminal **$200,000.**

Wis., Elm Grove—MILL, etc.—Reinders Bros., Elm Grove, feed mill and grain elevator. **$150,000-$200,000.**

Alta., Calgary — LABORATORY, etc. — Supreme Refineries, Ltd., 233 24 Ave. W., laboratory, office, boiler house and pump house at refinery. Approx. **$100,000.**

Alta., Red Deer—PLANT—Melvin Hough Associates, Red Deer, cement plant. **$?50,000.**

Ont., Toronto—WAREHOUSE, etc.—Northern Electric Co., Ltd., 131 Simcoe St., plans by Chapman & Oxley, 57 Bloor St. W., 2 story, 205x266 ft., structural steel, brick, tile warehouse and office, Fleet and Jarvis Sts. Approx. **$450,000.** CD 10/2/46.

UNCLASSIFIED

Ala., Fairhope—GAS SYSTEM—City, natural gas sys. **$755,000.** J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, consult. engr.

Fla., Milton—GAS SYSTEM—City, natural gas. sys. Approx. **$100,000.** J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, Ala., consult. engr.

Ga., Stone Mountain—PARK DEVELOPMENT—Dpt. State Parks, State Capitol Atlanta, park development incl. roads, dams, etc. Approx. **$100,000.** Robert & Co. Assoc., 96 Poplar St. N. W., Atlanta, consult engrs.

Ill., Springfield — DRIVE-IN THEATER — Frisina Amusement Co., 421½ S. 5 St., plans by Harry R. Jones, consult engr. and archt, Lawrenceville, 1,000 auto capacity drive-in theater. **$225,000.**

Ia., Council Bluffs—DRIVE-IN THEATER—Tri-States Theatre Corp., 1518 Harney St., Omaha, Neb., drive-in theater. **$100,000.**

Ia., Keokuk—DRIVE-IN THEATER—Frisina Amusement Co., 421½ S. 5 St., Springfield, Ill., plans by Harry R. Jones, consult. engr. and archt., Lawrenceville, Ill., 750 auto capacity drive-in theater **$100,000.**

Minn., Montevideo — SWIMMING POOL — City, A. E. Swenson, clk., J. J. Deneen, mgr., municipal swimming pool. **$100,000.** Wesley Bintz, Lansing, Mich., engr CD 9/2.

Mississippi—RURAL DISTRIBUTION LINES—Pearl River Valley Electrical Power Assoc., Columbia, 122 mi. rural distr. lines, Marion Co., **$122,000.** Bowman & Bowman, Greenwood, engrs

Mo., Hannibal — DRIVE-IN THEATER — Frisina Amusement Co., 421½ S. 5 St., Springfield, Ill., plans by Harry R. Jones, consult. engr. and archt., Lawrenceville, Ill., 750-800 auto capacity drive-in theater. **$100,000.**

Mo., Mexico—DRIVE-IN THEATER—Frisina Amusement Co., 421½ S. 5 St., Springfield, Ill., plans by Harry R. Jones, consult engr. and archt., Lawrenceville, Ill., 750 auto capacity drive-in theater. **$100,000.**

Neb., Omaha — GAS MAIN — Metropolitan Utilities Dist., 18 and Harney Sts., 12 in. gas main from 16 and Grand Aves. to company station at Florence, **$175,000;** 16 in. gas main from 16 and Cedar to 72 and Center Sts., **$157,000.** C. D. Robison, c/o owner, gas engr.

O., Toledo — SUBWAY — New York Central System, E. A. Dougherty, ch. engr., La Salle St. Station, Chicago 5, Ill., repairing Hawley St. subway. **$140,000.**

Tenn., Knoxville—DRIVE-IN THEATER—Gene Monday, Jr., 311 W. Vine Ave., drive-in theater. **$200,000.**

Tenn., Sparta—RESORT DEVELOPMENT—Steve Emberton, Sparta, lake resort development, incl. docks, etc. **$100,000.**

●**Texas, Arkansas, Missouri and Illinois**—GAS PIPELINE—Texas Illinois Natural Gas Pipe Line Co., 122 S. Michigan Ave., Chicago, Ill., 1,018 mi. 30 in. natural gas pipeline between area of Houston, Tex., to Joliet, Ill., traversing states of Texas, Arkansas, Missouri and Illinois. **$98,966,700.**

Tex., Bryan—ELECTRICAL DISTRIBUTION SYSTEM—City, electric distr. sys. **$100,000** Freese & Nichols, 4th Natl. Bank Bldg., Fort Worth, consult. engrs. CD 9/13.

Wash., Longview—POWER LINES—Cowlitz Public Utility Dist., Longview, second circuit to provide addnl. power for commercial section. **$100,000.**

Wash., Spokane—STADIUM—Licensed Clubs Stadium Com., Carl Carbon, chn., W. 57 26 St., steel, concrete football stadium. **$500,000.** Moffatt, Nichol & Taylor, Hyde Bldg., consult engrs.

●**Alaska**—RURAL DISTRIBUTION LINES—Matanuska Electric Assn., Palmer, rural distr. line extens. to Jonesville and Chugach and steam generating plant. **$4,500,000.**

Alberta and Saskatchewan—RAILWAY EXTENSION—Canadian National Railways, B. Wheelwright, ch. engr., 360 McGill St., Montreal, Que., railway exten. from Heinsburg Alta. to Frenchman Butte, Sask. Approx. **$300,000.** CD 1/22/46.

Ont., London—ARENA—Western Fair Assn., W. D. Jackson, gen. mgr., Queen's Park, plans by T. C. McBride, c/o owner, memorial arena. Approx. **$600,000.** CD 8/1/26.

Ont., Toronto—PLAY AREAS—Municipality, play arear at various locations, **$435,000.**

CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

BIDS ASKED

December 5

N. Y., New York—Comr. Water Supply, Gas & Electricity, Municipal Bldg., Zone 7, water-mains, appurtenances, 64 and 67 Aves., 230 and 231 Sts., Queens Boro. Plans deposit $1.

December 7

N. C., Goldsboro—At office R. M. Purser, bus. mgr., Goldsboro, water supply improvs., Div. 1, water treatment plant, incl. filter plant bldg., equip., pumps, piping and diversion dam; Div. 2, plumbing for filter plant bldg.; Div. 4, electrical work; Div. 5, elevated water storage tank, for North Carolina State Hospital, Goldsboro. Plans deposit $20 general, $10 other work. Wiley & Wilson, 905 Peoples Bldg., Lynchburg, Va., engrs.

N. C., Hope Mills—At office Town Clerk, Town Hall, Hope Mills, Contr. 1, water distr. sys., Contr. 2, pump house and tank foundations; Contr. 3, 75,000 gal. elevated tank or Alt. 22 ft. diam. and 75 ft. high or 20 ft. diam. or on 60 ft. high. Plans deposit $10 each sect. Paul M. Van Camp, Southern Pines, engr.

December 12

Md., Hyattsville—At office W. R. Douglass, purch. act., Washington Suburban Sanitary Comn., 4017 Hamilton St., furnishing, del. 1,500 curb cock boxes, 200 roadway boxes, four hundred 12 and 20 in. long curb box extens.; adv. ENR 12/1. CD 10/10.

Pa., Ambler—Ambler Boro. Ambler, water-mains, Hartranft Ave. Approx. $28,000.

December 13

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, water sys. in Lindale St., etc., Waterworks Dist. 2, Norwalk, C. I. 1229, $140,000. C. E. Arnold, co. engr. CD 9/16.

La., Lockport — Town, Town Hall, WW. improvs. incl. main extens. and WW. treatment plant. Plans deposit $20, J. B. McCrary Eng. Corp., 22 Marietta St., Atlanta, Ga., engrs. CD 8/9.

December 14

✦N. M., Las Cruces—U. S. Eng., Box 1538, Albuquerque, produced water well, White Sands Proving Ground, White Sands P-911G, Serial No. CIVENG-29-005-50-20 $30,000. CD 11/9.

Bids Asked

Tex., Houston—Royden Oaks Corp., 3701 Ella Lee Lane, c.i. waterlines, facilities. $30,000. Weldon F. Appelt, 2704 Sackett St., engr.

LOW BIDDERS

Calif., Laguna Beach—Laguna Beach County Water Dist., 306 3 St., received no bids Nov. 15, water sys. in Arch Beach Heights. Approx. $28,000. F. L. Goddard, city engr. CD 10/19.

N. J., Vineland—Bd. Comrs. Vineland Boro, Comrs. Chambers, Municipal Bldg., Nov. 15, water supply improvs. Contr. 5, elevated tank foundations. Contr. 6, 400,000 gal. elevated storage tank, from Chicago Bridge & Iron Co., 1700 Walnut St., Phila., Pa., **$56,800.** CD 10/27.

N. D., Kindred—City, Nov. 8, WW sys., from George Haggart Constr. Co., 403 1st. Natl. Bank Bldg., Fargo, **$87,807.** CD 10/13.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Nov. 18, steel watermains Penna Ave., etc. from Charles J. Corr, Widener Bldg., **$124,494.** Elbert J. Taylor, **Water Bureau Chief.**

Wis., South Milwaukee—City, rejected bids Nov. 15, water filtration plant. L. B. **$219,100.** Will re-advertise. CD 11/9, **under LB.**

CONTRACTS AWARDED

Ga., Springfield—City, enlarged watermains, installing fire hydrants, to Ridlehuber & Co., Greenwood, S. C., **$32,404.**

Ga., Tignall—City, WW improvs., to Sasser & Beale, Albany, **$29,820.** Bids 11/15. CD 10/31.

La., Many—City, City Hall, WW improvs., to Roy M. Mitchell, Bossier Bank & Trust Bldg., Shreveport, **$37,397.** Bids 11/8. CD 10/24.

N. C., Siler City—Town, W. O. Mann, clk., Siler City, watermains, to G. E. Moore Co., Inc., Greenwood, S. C., **$30,988.** Bids 11/15. CD 11, under Sewers, etc.

O., Cleveland—City, City Hall, 9 and Plum Sts., watermains, appurtenances, E. 17 and E. 18 Sts., to Utilities Constr. Co., 643 Green Rd., South Euclid, **$88,573.** C. J. Wenrick, city engr. Bids 11/4, awarded 11/15.

O., Dayton—Comrs. Montgomery Co., Courthouse, 1 m. g. water storage tank, Van Buren Twp., to Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, Ill. **$136,810.** Est. $155,000. Earl Riber, c/o owner, county sanitary engr. Bids 11/10, awarded 11/17. CD 10/27.

Pa., Phila.—Dpt. Pub. Wks., City Hall Annex, Oak Lane Reservoir, chlorine house valve chambers structure, Project 240-WWI, to McElwee Courbis Constr. Co., 59 Madison Ave., Ferton, N. J., **$116,926.** Elbert J. Taylor, Water Bureau Chief. CD 12/28/45.

S. D., Sioux Falls—City, City Hall, 9 and Dakota Sts., 2 wells to Acme Concrete Co., 710 S. 4 St. **$64,639.** Bids 11/7. CD 10/31.

Tex., Fort Worth—Taylor-Todd Corp., 1st. Natl. Bank Bldg., c.i. waterlines, facilities, own forces. Approx. **$35,000.** CD 11/16.

SEWERS, WASTE DISPOSAL

BIDS ASKED

December 6

Mich., Detroit—Dpt. P. Wks., C. D. Warner, comr., 104 City Hall, installing Lateral Sewer 6632, in Stoepel Ave. and in alley north of McNichols Rd. to alley east of Stoepel, Contr. P. W. 1076; installing Lateral Sewer 6650, in Schaefer Rd. from Schoolcraft to Pennsylvania R. R. right-of-way, Contr. P. W.-1084, G. R. Thompson, city engr. CD 8/8/44.

December 7

Ga., Valdosta—City, sanitary sewerage treatment plant. Smith & Gillespie, P. O. Box 1048, Jacksonville, Fla., engrs.

N. C., Hope Mills—At office Town Clerk, Hope Mills, Contr. 4, sewer lines; Contr. 5, sewage treatment plant. Plans deposit $10 each sect. Paul M. Van Camp, Southern Pines, engr.

December 8

O., Dayton—Comrs., Montgomery Co., Jessie B. Gano, clk., Courthouse, sewer and water extens., Hazelwood Ave., Woodward Height Plat from Broad Blvd. to Dorothy Lane, Van Burne Twp.; sanitary sewer Brookdale Dr.-South Stroop Rd. in Van Buren Twp. Plans deposit $5 each. CD 11/16.

Wis., Thiensville—Village, sanitary sewers, sewage treatment plant and pump station, Plans deposit $25. McMahon Eng. Co., Menacha, engrs. CD 12/7/47.

December 9

N. C., Statesville—City, Statesville, 6½ mi. sanitary sewer lines. Plans deposit $15.

December 12

S. C., Iva—Town, water distr. and sewerage sys. Quattlebaum Eng. Co., Johnston, engr.

December 13

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, 3.8 mi. 8 in. vitr. clay sanitary sewers in Ellis Lane, C. I. 1239. $119,000. C. E. Arnold, co. engr.

Bids Asked

Tex., Houston—Royden Oaks Corp., 3701 Ella Lee Rd., sanitary and storm sewers. $60,000. Weldon F. Appelt, 2704 Sackett St., engr.

Tex., Houston—Strickland-Whipple Constr. Co., 2nd Natl. Bank Bldg., sanitary and storm sewers, in Woodlawn Acres Annex 3. $60,000.

LOW BIDDERS

●Calif., San Francisco—Dpt. P. Wks., City Hall, Nov. 1, Merced Sewer Tunnel, Sect. B, Spec. 20,621, from M. & K. Corp., 405 Montgomery St., Fredrickson & Watson Constr. Co., and Piombo Constr. Co., 873 81 Ave., Oakland, **$1,381,530.** CD 10/28.

Ky., Louisville—Louisville & Jefferson Co. Metropolitan Sewer Dist., 414 W. Jefferson St., Zone 2, Nov. 17, laying sewer and laterals relieving overloaded sewers in Third, Fourth, Oak and Kentucky Sts., from W. L. Hailey & Co., 314 N. 42 Ave., Nashville, Tenn., open cut, **$472,612;** from Thos. A. Nolan Co., Shepherdsville, open cut and tunnel, **$472,406.** CD 10/20.

Minn., Edina—Village, B. Hawthorne, clk., Nov. 11, sanitary trunk and lateral sewers, Sanitary Sewer B-1, from R. Carlone, 761 Jefferson Ave., St. Paul, **$50,321.** P. W. Smith, village engr. CD 11/2.

Minn., Moorhead—City, P. A. Cook, clk., Nov. 7, waste treatment plant improvs., from Phelps-Drake Co., 1415 8 St., S.E., Minneapolis, **$128,222.** CD 9/22.

O., Cleveland—Bd. Comrs. Cuyahoga Co., Courthouse, Nov. 10, sewage treatment plant, Middleburg Heights, from Utilities Constr. Co., 643 Green Rd., South Euclid. **$89,374.** Est. $86,833. CD 11/2.

O., Lyndhurst—Village, Village Hall, 5310 Mayfield Rd., rejected bids Sept. 30, 24, 30, 33 and 36 in. concrete and vitri. storm and sanitary sewer, catch basins and curb connections, in Middledale and Clubside Rds. $50,000. CD 9/23.

Ore., Central Point—City, City Hall, Nov. 15, sewage pump, plant and pressure line to conver sewage treatment plant, Medford-Camp White trunk line, from Grossbeck & Hickson, 939 Polk St., Eugene, **$74,315.** Est. $100,000. CD 11/2.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Nov. 14, Schedule C-1, sewers for other than new housing, from Marino Masse, 3613 N. 8 St., **$75,594;** Schedule C-2, sewers for other than new housing, from Amedio De Sabato, 1235 Porter St., **$51,508.** CD 11/2.

●W. Va., Clarksburg—City, Nov. 16, from Leo Butler Co., 8416 Georgia Ave., Silver Springs, Md., Contr. 1, intercepting and branch sewers, West Fork Sect., **$397,044;** Contr. 2, intercepting and branch sewers, West Fork Sect. to Elk Creek, **$614,568;** Contr. 4, intercepting and branch sewers, Tower Elk Creek Sect., **$424,622;** Contr. 5, intercepting and branch sewers, Upper Elk Creek Sect. **$340,446***** from Emil Marvelletti & Sons, Cleveland, O., Contr. 3, intercepting and branch sewers, Upper West Fork Sects., **$185,260***** from Wiley N. Jackson Co., R.F.D. 4, Roanoke, Va., Contr. 6, sewage treatment plant, **$1,764,234***** from Electric Service Co., Ann Arbor, Mich., Contr. 9, electrical work, **$43,854.** Received no bids Nov. 16, Contr. 7, plumbing, **$18,034,** Contr. 8, heating, **$18,798.** CD 11/4.

CONTRACTS AWARDED

Calif., Concord — City, City Hall, sewage treatment and disposal plant, to E. V. Lane Co., Box 417, Palo Alto, **$272,710.** Bids 11/14. CD 10/18.

Calif., Wasco—Wasco Public Utility Dist., 809 7 St., Wasco, sewage disposal plant addns., to T. R. Gregory, 1112 Wellington Ave., Pasadena, **$51,980.** Bids 11/8. Koebig & Koebig, Rowan Bldg., Los Angeles, engrs.

Ill., Rockford — Rockford Sanitary Dist., Rockford, 1 story, brick, steel, concrete sewage treatment plant addn., to S. N. Nielson Co., 3059 W. Augusta Blvd., Chicago, **$622,516.** Bids 10/3. Greeley & Hansen, 220 S. State St., Chicago, engrs. CD 10/17, under LB.

Ill., Rockford — Sanitary Dist. of Rockford, 3300 Kishwaukee St., sewer addns., to Edwin Hogan, 750 Madison St., Rockford, **$321,910.** Bids 10/3. CD 7/16.

Kans., Wichita—City, City Hall, sanitary sewers to Martin K. Elby Constr. Co., 610 N. Main St., approx. **$135,000.**

La., Many—City, City Hall, sanitary sewer extens., to Clement Bethouey, Jr. & Co., Canal Bldg., New Orleans, **$78,083,** Bids 11/8. CD 10/25.

Tex., Fort Worth — Taylor-Todd Corp., 1st Natl. Bank Bldg., sanitary and storm sewers, own forces, **$58,000.** CD 11/16.

Tex., Lubbock—City, storm sewers. Approx. **$60,000;** sanitary sewer lines, **$90,000,** Purchase and Hire, G. K. Harris, c/o owner, city engr. CD 12/15/47.

Tex., San Antonio—E. J. Burke & Sons, 4220 S. Zarzamora St., sanitary sewers to R. J. Lanham, 715 E. Josephone St. Approx. **$85,000.** Harmon & O'Donnell, Temple Court Bldg., Denver, Colo., engrs.

B. C., Vancouver—City, 453 W. 12 Ave., sewer installation in portion area between Hudson and Granville Sts. and 54 and 63 Aves., to Baynes Manning Ltd., 1010 Seymour St., **$11,711.** Sewer installation in portion of area between Quebec and Cambie Sts. and 46 and 50 Aves., own forces, **$82,879.** Bids 11/7, awarded 11/17. CD 11/3.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

December 6
Massachusetts

December 8
Michigan

December 9
Kansas
Pennsylvania

December 14
Louisiana
Texas

December 9

✦Mississippi—Bureau P. Rds., Dpt. Commerce, Medical Arts Bldg., Florence, Ala., **Attala Co.**—bridge Proj. 3L4, Natchez Trace Parkway, Kosciusko.

LOW BIDDERS

California—State Div. Hys., P. Wks. Bldg., Los Angeles, Nov. 10, 2 reln.-con. bridges for undercrossings on Harbor Freeway at Land 2 Sts., from Oberg Bros. Constr. Co., 401 W. Florence Av., Inglewood, **$422,503.** CD 10/17.

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, Nov. 15, reln.-con. bridge and steel stringer-timber deck bridge over Los Angeles River, Imperial Hy. Proj. CC OB 624, South Gate, from John Strona, 1538 Philadelphia St., Pomona, **$502,567.** CD 10/25.

Calif., San Diego—City, Civic Center Bldg., Nov. 15, structural steel, concrete highway bridge at Midway Dr. of San Diego River, Schedule A, from Guy F. Atkinson Co., 22232 Santa Fe Ave., Long Beach, **$363,747*****Schedule B, from Pacific Coast Steel Corp., 3391 E. Randolph Ave., Vernon, **$447,790*****Schedule C, from Vinson Constr. Co., Box 930 Phoenix, Ariz. **$315,940.** CD 10/13.

Florida—State Hy. Dpt., Columbus Hotel, Miami, Nov. 15, main bridge and 2 relief bridges, approaches over Withlacoochee River on State Rd. 6 between Madison and Jasper, from Walter Constr. Co., Savannah, Ga., **$2,270,-755*****steel, concrete bridge with electrically operated double-leaf bascule over Inter-Coastal Waterway on Rd. 11 between Bunnell and Flagler Beach, from Espy Paving & Constr. Co., 108 E. Bay St., Savannah, Ga., **$326,194***53** supplemental steel, concrete pile vents on bridges over Tea Table Key Channel and Lignum Vitae Channel on Rd. 5 Monroe Co., from Powell Brothers, Ft. Lauderdale, **$103,446***** bridge over Santa Fe River and paving approaches on Rd. 241, Alachua and Union Counties, from John A. Benton Constr. Co., 301 20 St., St. Petersburg, **$123,966***2** bridges on Rd. 25, over State Rd. 500 and Atlantic Coast Line R. R., Polk Co., from Cone Brothers Contg. Co., Caeser Ave. and Cumberland St., Tampa, **$187,675.** CD 10/26.

Ill., Chicago—City, City Hall, Zone 2, superstructure 76 ft. bridge, over Chicago River, W. Irving Park Rd. from John F. Beasley Constr. Co., 20 N. Wacker Dr., Zone 6, **$192,-975.** CD 3/19/45.

Maryland—State Rds. Comn., Baltimore, Nov. 22, 101 ft. span steel plate girder bridge supported on reln.-con. structure over Monoc-

acy River on proposed Washington National Pike Main River Crossing consists of triple span 115x115x140 ft. continuous deck plate girders, flanked on each end by 65 ft. I beam spans, total 593 ft., dual superstructure each providing 30 in. clear roadway, site approx. 0.6 mi. downstream from Frederick Junction, Frederick Co., Contr. F-425-5-615, from Conduit & Foundation Corp., 770 S. Schuylkill Ave., Phila., Pa., **$762,182.** CD 11/9.

CONTRACTS AWARDED

Missouri — State Hy. Dpt., Jefferson City, one 50 ft. and four 40 ft. reinforcem. deck girder spans, concrete piers and bents. Station 813 plus 60 over Hinkson Creek, road from Columbia to Fulton, Route 40, Proj. FI 229 (8) B, and two 50 ft. and four 40 ft. reinforcem. deck girder spans, concrete piers and bents over Big Cedar Creek, road from Columbia to Fulton, Route 40, Proj. FI 229 (10) B, both Boone Co., to W. J. Menefee Constr. Co., Sedalia, **$58,249** and **$82,317** respectively. Bids 10/28. CD 10/19.

Pa., Pittsburgh—Allegheny Co., County Bldg., Contr. 8, Whitaker approach and abutment, Rankin Bridge over Monongahela River, to Ben Constr. Co., Hargrove St., **$886,720.** CD 9/29, under LB.

Washington—State Hy. Dpt., Olympia, repairing Snake River Bridge No. 3/621 on 2.86 mi. Primary State Hy. 3, Walla Walla and Franklin Counties, to M. P. Butler, 3419 13 Ave. S. W., Seattle, **$99,555.** Bids 11/18. CD 11/3.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

December 6
Maryland
Massachusetts

December 8
Michigan

December 9
Kansas
Pennsylvania

December 13
Texas

December 14
Louisiana
Texas

December 7

Colo., Denver—City and Denver Colo., I. P. Campbell, mgr. Improvt. & Parks, City and County Bldg., paving district on 17 St. from Broadway to Wynkoop removing tramway tracks and present pavement and 8 in. c. conc. repaving street from curb to curb, $188,839. Terry Owens, city engr. CD 9/21.

December 8

†Oklahoma — Mayes Co.—relocation and paving 3 mi. State Hy. 33 and salvaging bridge over Choteau Creek, $145,000. Plans deposit $15.

December 13

Pennsylvania—Dpt. Forests & Waters, 404 Education Bldg., Harrisburg.

Berks Co.—construct access road to New Kernsville Impounding Dam, mooring slip, planting and incidental work on Schuylkill River desilting proj. Plans deposit $10. Schuylkill River Project Engineers, 20 S. 15 St., Phila., engr.

December 15

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, construct access road, Belton Dam at Miller Springs Site, Leon River, Serial No. CIVENG-41-243-50-104.

December 20

†W. Va., Huntington — Veterans Admin., Munitions Bldg., Wash., 25, D. C., road repairs and resurf. for Veterans Administration Hospital, Spec. 4903, Proj. 47-5000.

Bids Asked

Tex., Houston—Roydon Oaks Corp., 3701 Ella Lee Lane, addnl. concrete paving, $65,000. Weldon F. Appelt, 2704 Sackett St., engr.

Tex., Houston—Strickland-Whipple Constr. Co., 2nd Natl. Bank Bldg., street constr. and paving, in Woodlawn Acres Annex 3. $70,000.

LOW BIDDERS

●California — State Div. Hys., Los Angeles, Nov. 10, 9.6 mi. plant mix surf. on cement treated base and existing surf. between 2.3 mi. east of Redlands and Beaumont San Bernardino and Riverside Counties, from Frederickson & Kasler, 212 13 St., Sacramento, **$1,143,443**; plant mix on cement treated surf. 6.5 mi. between north city limits of San Diego and Miramar, San Diego Co., from Cox Bros. Constr. Co., Box 36, Stanton, **$397,807.** CD 10/17.

Calif., Oakland—City, City Hall, Nov. 15, improv. 40 Ave. from San Leandro St. to E. 14 St. and San Leandro St. from Fruitvale Ave. to High St., from Gallagher & Burk, 900 73 Ave., **$53,247.** CD 11/12.

Colorado—State Hy. Dpt., Denver, Nov. 17, grading, surf., structures 4.06 mi. State Hy. 145 between Dolores and Cortez, Montezuma Co., from Floyd Haake Constr. Co., Santa Fe, N. M., **$107,215. Est. $121,237.** CD 11/16.

Colorado—State Hy. Dpt., Denver, Nov. 18, c. conc. 2.514 mi. State Hy. 8 from intersection 8 Ave. and 5 St. in Greeley and extend. north to intersect present pavement, Combined Colo. Proj. U-UG-006- and F936-1 (10), Weld Co., from Read Constr. Co., 706 W. 19 St., Cheyenne, Wyo., **$190,908,** est. $192,911; grading, surf., structures 6.783 mi. State Hy. 54, from inside Wray easterly to point near Nebraska state line, Colo. Proj. F 011-1 (2), Yuma Co., from C. L. Hubner Constr. Co., 4000 York St., Denver, **$151,852,** est. $182,647. CD 11/10.

●Florida — State Hy. Dpt., Columbus Hotel, Miami, Nov. 15, paving 9.363 mi. Rd. 25 northward from Haines City, Polk Co., and grading, constr., surf. 18.488 Rd. 314 between State Rd. 40 and Salt Springs, Marion Co., from W. L. Cobb Constr. Co., Tampa, **$545,087** and **$288,564** respectively***paving 18½ mi. Rd. 19 between Rds. 445 and 40 Lake and Marion Counties, and clearing, grading surf. 17.649 mi. road, constr. 40 bridges Rds. 475 and 480 between Cherry Lake and Rd. 1, near Greenville, Madison Co., from Caddell & Jackson, 2014 Dennis St., Jacksonville, **$99,459** and **$290,455** respectively***paving 4 mi. Rd. 44 between Leesburg and Sumter-Lake Co. line, and reworking, wid'n, resurf. 9 mi. Rd. 10 eastward from Suwannee Co. line to Lake City Columbia Co., from J. D. Manly Constr. Co., Leesburg, **$155,896** and **$82,554** respectively***paving 22 mi. Rd. 10 between Okaloosa and Holmes Co. lines, Walton Co., from Hardaway Contg. Co., 15 11 St., Columbus, Ga., **$214,473*****paving 11½ mi. Rd. 10 between Suwannee River and Live Oak, and Suwannee River Bridge, Suwannee Co., from Caron Constr. Co., Jacksonville, **$354,974*****paving 9½ mi. Rd. 25 northward from intersection with Rd. 19 Lake Co., from Polk Constr. Co., Lakeland, **$486,727.**

paving 7¼ mi. road, wid'n. 1 bridge and constr. another on Rd. 25 beginning a mile south of Leesburg and extend. southward, Lake Co., from H. E. Wolfe Co. Contg. Co., St. Augustine, **$377,541*****paving 4718 mi. Rd. 206 and constr. 1 bridge southwestward from Hastings, Putnam and St. Johns Counties from Brinson Constr. Co., 51 St. and E. Broadway Ave., Tampa, **$117,050*****paving 8 mi., constr. 1 bridge on Rd. 20 Taylor and Lafayette eastward from point 6 mi. east of Perry, Taylor and Lafayette Counties, from James H. Craggs Constr. Co., Ocala, **$409,956*****wid'n. reworking 10 mi. Rd. 5 and constr. 5 bridges between Chancey Bay and the Martin-Palm Beach Co. line, Martin Co., from John A. Benton Constr. Co., 301 20 St., St. Petersburg, **$189,642*****surf. 13 mi. Rd. 500 between Ashton and Holopaw, Osceola Co., from Belcher Oil Co., 1217 Bisc. Blvd., Miami, **$97,977*****surf. 12.5 mi. Rd. 25 between South Bay and Hendry Co. line, Palm Beach Co., from Asphalt Paving Co., Coral Gables, **$165,813*****reworking, surf. 17.778 mi. Rd. 7, 9.938 mi. southward from Rd. 814 and 8.765 mi. southward from Rt. 8, Broward and Dade Counties, from Broward Asphalt Corp., Ft. Lauderdale, **$113,974*****grading, surf. 9.536 mi. Rd. 143 southwestward from Georgia line Hamilton Co., from L. M. White Bronson **$77,829** CD 10/26.

Ill., Chicago—City, City Hall, Nov. 15, paving 87 St. Vincennes to Damen Aves, from American Asphalt Paving Co., 12 S LaSalle St., Zone 3, **$97,180.** CD 11/9.

Kentucky—State Dpt. Hys., Frankfort, rejected bids Nov. 4, grading, draining, high type wid'n. 0.487 mi Fredonia-Eddyville Rd., SP 17-222, Caldwell Co L B. **$60,162.** CD 11/10, under LB

●Maryland—State Rds. Comn. Baltimore, Nov. 15, grading drainage, surf. 4.66 mi. divided hy. along relocation of U. S. Rte. 240 (Washington National Pike) beginning approx 0.5 mi. northwest of Thurmont and extending northerly toward Frederick, Contr. F-425-2-615, Frederick Co., from W. E. Graham & Sons, Cleveland, N. C., **$1,389,095.** CD 11/2.

●Massachusetts — Commonwealth of Mass., Dpt. Wks., 100 Nashua St., Boston, Nov. 15, state hy. and bridge, Proj. F-273(7) FG-273(8), Leominster, from Bayer & Mingolla Constr. Co., Inc., 90 Lincoln St., Worcester, **$1,050,150.**

Montana—State Hy. Dpt., Helena, rejected bids Nov. 17, grading sand surf. and drainage structures on 0.888 mi. Primary Pass-Whitehall Rd. in Jefferson Co., low bid was **$216,221;** will re-advertise; cancelled bids to have been opened Nov. 17, grav. surf. 8.79 mi. Conrad-east Rd., Pondera Co. CD 9/28.

Neb., Nebraska City—City and State of Nebraska, Lincoln, Nov. 8, paving Dists. 9 and 43, from Watt-Dugdale Constr Co., 1331 S. 20 St., Omaha, **$61,170. F. H. Kliesch,** Lincoln, state engr.

O., Lakewood and Cleveland—Comrs. Cuyahoga Co., Courthouse, Cleveland, Nov. 17, grading, drainage, paving, wid'n., curbs, sidewalks on W. 117 St. from Edgewater Dr. to Madison Ave., from Leland Contg. Co., 1737 Euclid Ave., Cleveland. **$198,958.** Est. $229,000 CD 11/10.

Texas—State Hy. Comn., Austin, Nov. 14, grading, structures and surf. treatment on US Hy. US 75, Proj. F 515 (12), Dallas Co., from T. C. Cage, 6637 W. Commerce St., San Antonio, and Dean Skinner Dallas Hy., Austin, **$393,565.** CD 10/25

Texas—State Hy. Comn., Austin, Nov. 15, flexible base and single asph. surf. tr. 18.071 mi. Hy. FM 882 and FM 99 Proj. S. 1283 (1). S1283 (2), R 348-11-1, Bee and Live Oak Counties, from Thomas & Ramsey, Inc., Alice, **$847,235*****flexible base and double asph. surf. tr. 20.22 mi. Hy. RM 33, Reagan and Crockett Counties, from M. E. Ruby, San Marcos, and W. L. Barnes, Austin, **$124,990*****roadbed treatment 11.592 mi. Hy. FM 794, Proj. F. 1133-2-1, Gonzales Co., from T. C. Cage, 6637 W. Commerce St., San Antonio, and Dean Skinner, Dallas Hy., Austin, **$97,929** est. **$110,000*****flexible base and single asph. surf. tr. 14.439 mi. Hy. FM 1014- and 1013, Proj. S. 1327 (1) and 1328 (1), Tyler Co., from Campbell & Kay, Tyler, **$194,576*****foundation course and single asph. surf. tr. 9.629 mi. Hy. FM 220, Proj. S 506 (2), Hamilton Co., from Wesley Hall, Brownwood, **$75,935.** CD 10/25.

Virginia—State Hy. Dpt., Richmond, Nov. 17, c. conc. 2.372 mi. U. S. 29, joining and improvt. proj. currently underway north of Altavista, Campbell Co., from Wm. F. Bowe & Co., Augusta, Ga., **$205,412**; stabil. base 4.65 mi. and hardsurf. 1.16 mi. Secondary Routes 643 and 616 between Warrenton and Casanova, Fauquier Co., from W. W. Sanders, Warrenton. **$64,575.** CD 11/1.

●West Virginia—State Rd. Comn., Charleston, Nov. 15, relocation 0.9 mi. U. S. Route 60 between Gauley Bridge and Glen Ferris, Fayette Co., from Rose & Ritchie, Ravenswood, **$535,076*****traffic bound surf. 7.22 mi. Secondary Route 7 between Mayael and Dink, Clay Co., from Standard Asphalt & Tar Co., 1646 4 Ave., Charleston, **$181,037*****traffic bound surf. 6.55 mi. Middle Grave Rd., Secondary Rt. 34 Marshall Co., from Harmans Brothers, Grafton, **$185,099*****traffic bound surf. Secondary Route 83/4 between Jolo and the Virginia State Line, McDowell Co., from Brown & Wright Co., Princeton, **$181,276*****constr. 5.67 mi. Secondary Route 5, leading to Braxton line, Webster Co., from Atlas Eng. and Sam C. Polino, Elkins, **$171,339*****imprv. 8.91 mi. Secondary Route 11 and 12 between Cheesehead and Steel Ridge, Putnam Co. from Charleston Constr. Co., 3 Spring St., Charleston, **$144,114.**

CONTRACTS AWARDED

California — State Div. Hys., Los Angeles, Imprv. 0.4 mi. Lincoln Blvd. between Washington and Venice Blvds., Los Angeles, to Jesse E. Smith, 444 E. Ross St., Glendale, and A. A. Edmonson, 1021 Grandview Ave., Glendale, **$80,810.** Bids 9/1. CD 8/8.

●California—State Div. Hys., Los Angeles, plant mix on cement treated surf. and existing surf. 9.6 mi. between 2.3 mi. east of Redlands and Beaumont San Bernardino and Riverside Counties, to Frederickson & Kasler, 212 13 St., Sacramento, **$1,143,443.** Bids 11/10. CD 11/22, under LB.

●Calif., Los Angeles — U. S. Eng., 751 S. Figueroa St., imprv. Magnolia Blvd. to Van Owen St., Tujunga, Wash. CIVENG-50-7, to Bressi & Bevanda, Box 439, North Hollywood, **$1,854,624.** Bids 10/4. CD 9/9.

†Montana—Bureau P. Rds., Dpt. Commerce, Portland, Ore., Nov. 17, surf., oiling 10 mi. Gorman-Ice-the-Sun Hy. beginning at Logan Pass and extend. southwesterly to foot of Pass grade in Glacier National Park, to Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho **$370,741.** CD 10/26.

Montana—State Hy. Dpt., Helena, grav. surf. and plant mix oiling 23.21 mi. **Ekalaka-Baker** Rd. in Carter and Fallon Counties, to Northwest Eng. Co., Rapid City, S. D. and Stanley H. Arkwright, Inc., Securities Bldg., Billings, **$384,724*****grading, drainage constr. and bridge works 11.98 mi. Dunham-Scobey Rd. Section of Opheim-Scobey Rd. in Daniels and Valley Counties to Walling Constr. Co., Lewistown, **$71,546*****grav. surf., 15.3 mi. Potomac-Flaxville Rd., Roosevelt and Daniels Counties, to Inland Constr. Co., 3867 Leavenworth St., Omaha, Neb., **$133,107*****grading, drainage structures 4.81 mi. Ruby Dam-Alden Rd., Madison Co., to Carl M. Tubbs Constr. Co., Cody, Wyo., **$63,337*****grav. surf., 10.41 mi. Plentywood Canadian Line Rd., Sheridan Co., to Riggen-Nelson Constr. Co., Harlem, **$87,094*****grav. surf. 12.41 mi. Hardi-Sarpy Rd., Big Horn Co., to W. O. Renz, 1837 Oregon Ave., Butte, **$53,069*****grading, small drainage structures, and 2 timber bridges 7.17 mi. Ralston-Anaconda Rd., Deer Lodge Co., to Carl M. Halvorson, 2274 N. W. Lovejoy St., Portland, Ore., **$85,200.** Grand total **$878,077** Bids 11/17. CD 9/28.

●New Jersey—State Hy. Dpt., Trenton, grading 4.3 mi. Route 44, Sects. 11 and 14, from Pierces Corner to Berkeley Rd., W. Deptford Twp., Boro of Paulsboro and East Greenwich Twp., Fed. Proj. F-122 (7), Gloucester Co., to J. R. Williams, 51 N. Woodbury Rd., Pitman, **$1,031,946.** Bids 11/17. CD 10/28.

New Jersey—State Hy. Dpt., Trenton, partial widn., resurf. 1.6 mi. South Bound Rd., Rt. 25, Sect. 1438 M from Sherman Ave. to Dancy St., Newark, Fed. Aid. Proj. UI-185 (11) Essex Co., to Franklin Contg. Co., 12 Central Ave., Newark, **$467,789.** Bids 11/17. CD 10/31.

Okla., Tulsa — City, City Hall, street pavement and drainage Dist. 1234, to Layman & Sons, Riverside Dr., **$68,779. Est. $69,200.** Awarded 11/10. W. R. Wooten, city engr.

†Oregon—Bureau Pub. Roads, Dpt. Commerce, Morgan Bldg., Portland, grading 4 mi. Flora-Enterprise Hy., Wallowa Co., to Grant Constr. Co., Coeur d'Alene, Idaho, **$101,350.** Bids 11/15.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Imprv. Lanier Ave., to Kelly Paving Co., 1347 E. High St., **$171,412.** Bids 11/9. CD 11/1.

Tex., Fort Worth—Taylor-Todd Corp., 1st. Natl. Bank Bldg., street constr. and asph. paving, own forces, **$62,000.** CD 11/16.

†**Washington** — Bureau Pub. Roads, Dpt. Commerce, Morgan Bldg., Portland, Ore., surf., bit., preservative tr., 16 mi. Republic-Kettle Falls Hy., Proj. 20-C1, E1, I1, J1, and K1, Ferry Co., to F. R. Hewett Co., Parkwater, **$188,702.** Bids 11/18. CD 11/9.

Wash., Yakima—Yakima Co., County Courthouse, grading, draining, ballasting and crushed stone surf., Weikel, Zimmerman and Tractorias Rds. in Cowiche-Tieton Area, Proj. No. 357, to Riverside Sand & Gravel Co., Yakima, **$76,081.** Bids 11/8, awarded 11/18. CD 11/10.

EARTHWORK, WATERWAYS

BIDS ASKED

December 6

†**Illinois**—U. S. Eng., 826 U. S. Courthouse & Customhouse, St. Louis 1, Mo., levees, Grand Tower, east bank of Mississippi River between I-B, Jackson Co., along riverfront at Grand Tower Drainage & Levee Dist., Project Item approx. river miles 78.7 and 80, above mouth of Ohio River, Proj. Item I-B, CIVENG 23-065-50-34. CD 11/14

December 13

†**Arizona-California-Nevada**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., one 120-inch butterfly valve incl. one upstream flange for turbine-inlet pipe for Hoover Power Plant, Boulder Canyon Proj., Spec. 2819. Extended date. CD 11/1.

†**Arkansas**—U. S. Eng., P. O. Box 97, Memphis, Tenn., placing approx. 670,000 cu. yd. new levee construction on west bank of St. Francis River vicinity of Blue Cane, Clay and Greene Counties, Inv. Serial No. CIVENG-40-041-50-64. Extended date. CD 11/16.

†**Washington**—Bureau Reclamation, Dpt. Interior, Coulee Dam, earthwork, asphalt membrane lining, pipelines, structures for Area E-1, laterals and sublaterals, except Lateral E1 20 and sublaterals and East Low Canal Laterals, Columbia Basin Proj., Spec. 2838. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

About December 15

†**New Mexico**—U. S. Eng., P. O. Box 1538, Albuquerque, Conchas Dam and Reservoir Proj., 25,000 gal. steel elevated water tank, etc., on Canadian River Conchas Dam, in San Miguel Co., Serial No. CIVENG-29-065-50-6.

Bids Asked

Tex., Houston—Strickland—Whipple Constr. Co., 2nd Natl. Bank Bldg., grading and site development, Woodlawn Acres Annex 3. $35,000.

LOW BIDDERS

†**Alabama**—U. S. Eng., P. O. Box 1169, Mobile, 7, Nov. 15, rehabilitation facilities at Lock No. 17 on Black Warrior River, Serial No. CIVENG-01-076-50-17, from Harrison & Wright Co., Box 664, Tallahassee, **$69,596.** CD 10/27

†**Arkansas**—U. S. Eng., 300 Broadway, Little Rock, Nov. 18, installing tainter gates and machinery, Norfolk Dam, North Fork River, Serial No. CIVENG-03-500-50-25, from Consolidated Western Steel Corp., Orange, Tex., **$161,996.** Est. $260,438. CD 10/26.

†**Georgia**—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., Nov. 17, sub-impounding dam across Proctor Creek, Cobb Co., Serial No. CIVENG-01-076-50-31, from Ellard Contg. Co., P. O. Box 6705, Birmingham, Ala., **$266,694.** CD 10/31.

†**Kentucky**—U. S. Eng., 830 W. Broadway, Louisville, Nov. 15, flood protection works, Sect. 2, Part 2, Newport, CIVENG-43-029-50-25, from Swan Constr., Inc., Newport, **$320,431.** CD 10/24.

†**Mississippi**—U. S. Eng., 826 U. S. Courthouse and Customhouse, St. Louis 1, Mo., Nov. 17, timber piling drum dikes at Fish Bend, in Mississippi River, Miles 132-5-144 above mouth of Ohio River, CIVENG 23-065-50-30, from Central Eng. & Contg. Co., 3829 W. Pine Blvd., St. Louis, Mo., **$98,490.** Est. $84,649. CD 11/10.

N. J., Atlantic City—City, jetty beachfront, Atlantic and Madison Aves., from Arthur R. Henry, Inc., 259 New Jersey Ave., Absecon, **$55,000.** CD 7/26.

●**Oregon**—U. S. Eng., Pittock Block, Portland, Zone 5, Nov. 18, training jetty at mouth of Umpqua River, Douglas Co., CIVENG-45-026-50-124, from Kern & Kibbe, 5706 N. Bradford St., Portland, and Peterson Constr. Co., Sandy, **$1,141,667.** CD 10/12.

CONTRACTS AWARDED

●†**Calif** — Bureau Reclamation, Dpt. Interior, Tracy, earthwork, concrete lining, and structures, for Delta-Mendota Canal, Station 4108 plus 50 to 4535 plus 00, Central Valley Proj., Spec. 2799, to Morrison-Knudsen Co., Inc., 411 W. 5 St., Los Angeles, and M. H. Hasler Constr. Co., Box 357, Santa Ana, **$2,173,889.** Bids 10/26, awarded 11/10. CD 11/1, under LB.

†**Calif., Vallejo**—Pub. Wks. Office, Mare Island Navy Yard, maintenance dredging in Mare Island Strait, NOY 19210, Spec. 22967, to San Francisco Bridge Co., 503 Market St., San Francisco, **$147,176.** Bids 10/12. CD 9/27.

†**Calif., Vallejo**—Pub. Wks. Office, Mare Island Naval Shipyard, raise levees at Mare Island Naval Shipyard, NOY 19209, Spec. 22966, to Tyson & Watters, P. O. Box 1914, Sacramento, **$51,400.** Bids 10/19, awarded 11/14. CD 10/11.

Fla., Ft. Lauderdale—Victor Nurmi c/o contractor, seawall at Nurmi Isles, to Powell Bros., 14 S. W. First Ave., Approx. **$50,000.**

†**South Carolina**—U. S. Eng., Post Office Box 905, Charleston, removing 1,784,500 cu. yd. material from Sampit River, Sampit cut-off and upper 2½ mi. of Winyah Bay Channel, Georgetown Co., Serial No. CIVENG-38-081-50-7, to Atkinson Dredging Co., Great Bridge, Va., **$153,467.** Bids 11/15 CD 11/9.

B. C., New Westminster—City, City Hall, rebuilding Columbia Street retaining wall, to Dawson Wade & Co., Ltd., 775 Clark Dr., Vancouver, **$178,000.** Bids 9/12, awarded 11/18.

AIRPORTS AND AIRBASES

BIDS ASKED

December 15

†**N. Y., Rome**—FLIGHT HAZARDS—U. S. Eng., 80 Lafayette St., New York, Zone 13, removing flight hazards, Griffiss Air Force Base. Extended date. CD 10/10.

December 20

†**Va., Langley Field**—LABORATORY—National Advisory Com. for Aeronautics, Langley Field Air Force Base, 2 story, bsmnt., brick, concrete, steel dynamics laboratory and internal flow laboratory, reinforced steel piling, heating, ventilating and plumbing and electrical work. $300,000. Plans deposit $20. Extended date. Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, archt. CD 11/15.

●†**Alaska, Fairbanks** — HOUSING — Alaskan Air Command Fort Richardson, Anchorage, 877 housing units at Ladd Field, $8,770,000; 624 units at Elelson Field, **$6,240,000.**

LOW BIDDERS

†**Ala., Montgomery**—LIGHTING SYSTEM—U. S. Eng., P. O. Box 1169, Mobile, 7, lighting system, Maxwell Field, from Harrison & Wright Co., Box 664, Tallahassee, Fla. **$101,-634.**

Pa., Pottstown—AIRPORT—Pottstown Boro, Pottstown, rejected bids Sept. 30, airport clearing, grading, drainage, L. B **$43,119.** Will re-advertise CD 9/8.

CONTRACTS AWARDED

†**Calif., Muroc**—WATER SYSTEM—U. S. Eng., 751 S. Figueroa St., Los Angeles, water supply sys. at Muroc Air Force Base, Serial No. Eng-04-343-50-6, to Edward R. Sipe Co., 2545 San Fernando Rd., Los Angeles, **$176,468.** Bids 11/10.

Conn., Windsor Locks — AIRFIELD IMPRVS.—State, Raymond S. Thatcher, comptroller, 114 State Capitol, Hartford, high density light equip. and electrical construction work, Bradley Field, Proj. B A-CC29, to Bauer & Co., 844 Windsor St., Hartford, **$55,517.** Bids 11/10. CD 10/26.

Man., Winnipeg — TRANSMITTER STATION, etc.—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., transmitter station at local air station, to Claydon Co., Ltd., 290 Garry St., **$238,000;** remote receiver bldg. and installing required services, to Commonwealth Constr. Co., Ltd., 300 Royal Bank Bldg., **$178,299.**

AMERICANS ABROAD

Lebanon—Trans Arabian Pipe Line, 505 Park Ave., New York, N. Y., U. S. A., awarded contract oil pipeline across Lebanon, to Williams Bros. Co., Natl. Bank of Tulsa Bldg., Tulsa, Okla., Graver Constr. Co., 424 Madison Ave., New York 17, N. Y., and Chicago Bridge & Iron Co., 2492 McCormick Bldg., Chicago 4, Ill., U. S. A

PUBLIC BUILDINGS

BIDS ASKED

December 6

●**Mich., Ann Arbor**—DORMITORY—University of Mich., Bd. Regents, Robert P. Briggs, vice pres., Room 2024 Admin. Bldg., 9 story, 424x 210 ft., irregular shaped, rein.-con., structural steel, masonry men's dormitory, $5,000,000. Plans deposit $100. Andrew R. Morison, 713 Fox Bldg., Detroit, archt. Philip J. Endlich, 1806 Oakland Blvd., Detroit engr.

Mich., Plymouth—SCHOOL—Bd. Educ., 1 story, 177x200 ft., brick and stone, glazed, masonry, marble, structural steel, rein.-con. high school, $500,000 Plans deposit $20. N. O. Gould & T. W. Moss, 203 Conner Bldg., archts CD 10/5.

S. C., Clemson — ENGINEERING — Clemson Agricultural College, Clemson, 50,000 sq. ft. agricultural engineering bldg. Plans deposit $50. Oliver & Dickson, 1226 Pickens St., Columbia, archts. CD 9/16/46

December 7

Conn., Mansfield — KNIGHT MEMORIAL UNIT—State, Rymond S. Thatcher, comptroller, 114 State Capitol, Hartford, Knight Memorial unit, Proj. H/A-X-39, laboratory and X-ray, Mansfield State Training School and Hospital. Plans deposit $25.

N. C., Goldsboro—BUILDING—State Hospital Bd. Control, R. M. Purser, genl. bus. mgr., Golds-boro, farm colony bldg. Extended date. H. Raymond Weeks, Inc., Durham, archt. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, Va., engrs. CD 11/11

Pa., Clarks Summit—INFIRMARY—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, renovating infirmary bldg. group at Clarks Summit State Hospital. Plans deposit $10 general contract, $2.50 others. George M. D. Lewis, 445 Kressler Court, Scranton, archt. CD 11/22, under LB

December 8

Mass., Framingham—HOUSING—Town of Framingham Housing Auth., Town Hall, 25 single and 25 duplex, 75 unit Veterans Housing Proj. 200-2, Approx. $750,000. Plans deposit $50, Samuel Graser, 105 Newbury St., Boston, archt. CD 11/4.

Mich., Detroit—ENGINEERING—Bd. Educ., 1354 Broadway, 2 and 3 story, bsmnt., 69x97 ft. and 80x179 ft. masonry, concrete, rein.-con., structural steel, 3rd unit of engineering bldg., $2,000,000. Plans deposit $25. Pitlafion & Montana, 153 E. Elizabeth St., archts. Snyder & McLean, 2214 Penobscot Bldg., engrs. CD 1/4/46.

December 9

N. Y., New York—STREET and YARD IMPRVS.—New York City Housing Auth., 63 Park Row, Zone 7, street and yard imprvs. for Bronx River Houses (Proj. No. NYS-39) in area bounded by E. 174 St., Harrod and Bronx River Aves., Bronx Boro Plans deposit $25.

December 12

Calif., Arcata—GYMNASIUM—Arcata Union High School Dist., Arcata, rein.-con., structural steel gymnasium, Approx. $250,000. Plans deposit $25. Masten & Hurd, 526 Powell St., San Francisco, archts CD 6/3.

Mich., Wayne—SCHOOL—Bd. Educ., Dist. Village of Wayne, 2 story, 62x143 ft. masonry, concrete, stone, Washington School addn. $250,000. Plans deposit $25, Malcomson & Hammond, Inc., 1217 Griswold St., Detroit, archt.

O., Struthers — GYMNASIUM — City, City Hall, Bond memorial gymnasium and remodeling present gymnasium into home economics dept. $450,000. Plans deposit $25. Former bids rejected. Randall Medicus, 314 W. Federal St., Youngstown, archt. CD 6/24, under LB.

December 14

Calif., San Andreas—HOSPITAL—Mark Twain Hospital Dist., Courthouse, 1 story, rein.-con. 86 bed hospital, $650,000. Plans deposit $100. Robert Stanton, Carmel, archt. Mac D. Perkins, 110 Sutter St., San Francisco, engr. CD 10/3.

†**N. M., Los Alamos**—BUILDING—U. S. Atomic Energy Comn., Los Alamos, Bldg. 1 alterations, addns Proj A-TA-2, Inv No. 291-50-38, $250,000.

Okla., Durant—VOCATIONAL—City and Bd. Educ., Durant, vocational and physical educ. bldgs, $275,000 Plans deposit $25. Harold Flood, Ardmore, archt

January 11

●**N. Y., Newark**—INFIRMARIES—Dpt. Mental Hygiene, Albany, 2 infirmary bldgs. at State School, $2,000,000. Plans deposit $25. De-Young & Moscowitz & Rosenberg, 265 E. 42 St., New York Zone 17, archts CD 7/12/45.

January 15

●**Conn., Bridgeport**—HOUSING—City, Anthony D. Cirest, chn. Bridgeport Housing Auth., 11 apartments, 264 family units, Lexington Ave., $2,500,000; 21 bldgs., 504 dwelling units, garden apartments, $4,000,000. Harry Lindsay, 211 State St., archt. CD 10/20

LOW BIDDERS

Ala., Tuscumbia—WAREHOUSE, etc.—City, Nos. 16, warehouse, shop, etc. for City Electric Dpt., from Brice Bldg Co., 1021 2 Ave. N., Birmingham, **$179,500.**

Calif., Costa Mesa—TECHNOLOGY—Orange Coast College Dist., 19951 S. Harbor Blvd., Costa Mesa, No. 14, 30,000 sq. ft. technology bldg. from Curlett Constr. Co., 820 W. Esther St., Long Beach, **$351,751.** Est. $325,000

†**Calif., Inyokern**—LABORATORY—U. S. Navy, Inyokern, Nov. 16, aerodynamics field laboratory, 41x482 ft. main bldg., 21x67 control bldg. Spec 21054, from Haddock Eng. Ltd., 1616 S. Greenwood Ave., Montebello, **$596,000.** CD 10/19.

●**Calif., Sacramento**—STATE CAPITOL—State Div. Architecture P. Wks. Bldg., Nov. 15, general contract 6 story, bsmnt., rein.-con., structural steel, 340,000 sq. ft., State Capitol Annex bldg., from Swinerton & Walberg, 225 Bush St., San Francisco, **$4,155,729***** heating, ventilating and air-conditioning, from S. Glen Hickman, 3170 E. 11 St., Los Angeles, **$610,725***** plumbing, from Victory Eng. & Electric Co., 1245 Riverside Dr., Los Angeles, **$574,274***** electrical work, from Westinghouse Electric Co., 410 Bush St., San Francisco, **$361,580.** CD 10/31.

Conn., Wallingford—SCHOOL—Bd. Educ., Wallingford, Nov. 14, 2 story, bsmnt., 600 student school, N. Main St., from William J. Megin, Inc., 51 Elm St., Naugatuck, **$655,555.**

Fla., West Palm Beach—JAIL—Palm Beach Co., Nov. 14, jail, from Arnold Constr. Co., 7 Murray Bldg., Palm Beach, **$178,778.** CD 9/13.

Ind., Gary—SCHOOL—Bd. School Trustees, 524 Garfield St., Nov. 8, 1 and 2 story, 60x140 ft. Pulaski School, Georgia St. and 9 Ave.,

from Superior Constr. Co., 1800 E. 7 St., **$414,000.** Beine, Hall & Curran, 607 Broadway, archts. Perkins & Will, 309 W. Jackson Ave., Chicago 6, Ill., assoc. archts. CD 10/5

Ind., Plainfield—SCHOOL—State of Indiana, P. Wks. & Supply Div., W. R. Myheck, dir., state house, Indianapolis, rejected bids, Oct. 18. Indiana Boys School. $500,000. Will re-advertise. CD 10/12.

Kan., Topeka—ADMINISTRATION—State of Kansas, Topeka, Nov. 9, general contract administration bldg. at Boys Industrial School, from Casson Constr. Co., 603 Topeka St., **$264,-605.** CD 11/1.

Ky., Louisville—HOSPITAL—Childrens Hospital, 226 E. Chestnut St., Nov. 17, childrens hospital addn., from Sullivan & Cozart, 832 W. Kentucky St., **$736,615.** Jos. H. Kolbrook, Starks Bldg., archt. CD 12/1/47

Mass., Hull — HOUSING — Town Housing Auth., Hull, Nov. 17, veterans housing between C and D Sts., from Wexler Constr. Co., Inc., 2 Elm Pl., Brookline, **$279,884.** CD 10/27.

Mass., Monson—BOILER—Commonwealth of Mass., Dpt. Mental Health, 100 Nashua St., Boston, Project M-116, Contr. 1, addnl. boiler State Hospital, from The Merrill Co., 98 Granite St., Boston, **$99,967.** Edward C. Brown Co., 77 Summer St., Boston, engrs.

Mass., Norwood—HOUSING—Town of Norwood Housing Auth., Municipal Bldg., Nov. 16, 200-1 veterans housing, northeasterly of Roosevelt Ave., from A. F. Smiley Constr. Co., 115 Trenton St., Pawtucket, R. I., **$693,000.** CD 10/31.

N. M., Artesia—HIGH SCHOOL—Artesia Municipal School Dist. 16, Artesia, Nov. 9, brick Junior High School, concrete frame and fdn., from H. A. Campbell, Artesia, **$260,402.** Est. $250,000. CD 11/2.

✦N. M., Las Cruces—OFFICERS QUARTERS—U. S. Eng., Box 1538, Albuquerque, Nov. 9, genreal contract single officers quarters and paint and oil storage bldg., Serial No. Eng. 29-005-50-6, from C. H. Leavell & Co., 1900 Wyoming St., El Paso, Tex., **$374,950.** Est. $250,000. CD 10/18.

N. C., Buxton—SCHOOLS—Dare Co. Bd. Educ., E. P. White, chn. Bd. Buxton, cancelled bids to have been opened Nov. 15, 260x294 ft. elementary and high school Project indefinitely postponed. **CD 11/2.**

Pa., Clarks Summit—INFIRMARY—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, rejected bids Oct. 5, general contract renovating infirmary bldg. group at Clarks Summit State Hospital, L. R. **$335,791.** Will re-advertise. CD 10/10, under LB.

✦✦Pa., Pittsburgh — HOSPITAL — U. S. Eng. 925 New Federal Bldg., Zone 19, Nov. 22, general contract buildings, passageways and utilities on site of Veterans Admin. Neuropsychiatric Hospital, CIVENG-36-058-50-18, for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., from Johnson, Drake & Piper, 86 Trinity Pl., New York 6, N. Y., B. Perini & Sons, P. O. Box 8157, Squirrel Hill Station, Pittsburgh, James McHugh & Sons, 6449 S. South Park Ave., Chicago 37, Ill., Peter Kiewit, 1024 Omaha Natl. Bank Bldg., Omaha 2, Neb., and Charles H. Tompkins, 907, 16 St., N. W., Wash. 6, D. C. **$15,710,000.** elevators, from Otis Elevator Co., Oliver Bldg., **$362,356.** CD 11/3.

Tex., San Antonio—ADMINISTRATION—San Antonio Junior College, 423 S. Alamo St., Nov. 15, 2 story, masonry administration bldg., concrete pier and beam fdn., from Victor Prassel Constr. Co., Inc., P. O. Box 526, **$418,000.** CD 10/26.

●Va., Arlington—JUNIOR HIGH SCHOOL—Arlington Co., Arlington, Nov. 17, Vacation Land Junior High School from Wise Contr. Co., 8 and Grace Sts., Richmond, **$1,437,695.** Rhees Burket, 1223 Connecticut Ave., N. W., Wash., D. C., ar-hit

●W. Va., Charleston—STATE OFFICE—State Office Bldg. Comm., State Capitol Bldg., Nov. 15, state office, from J. A. Jones, 209 W. 4 St., Charlotte, N. C., Approx. **$2,220,700.** CD 11/4.

Wis., Superior—SCHOOL—Bd. Educ., 1420 Hughitt Ave., Nov. 14 general contract 2 story part bsmnt., 600,000 cu. ft. rein.-con., steel, brick, stone school, from A. Hedenberg Co., 4621 E. Superior St., Duluth, Minn., **$430,-000.** CD 10/26.

B. C., Vancouver—SCHOOL—Vancouver School Bd., 590 Hamilton St., Nov. 14, 2 story, full bsmnt., rein.-con. Douglas School addn., 59 Ave. and Victoria Dr., from Bennett & White Constr. Co., Ltd., 660 Howe St., **$363,617** CD 10/18.

CONTRACTS AWARDED

Calif., El Cerrito—SCHOOL—Richmond Elementary School Dist., 1108 Bissell Ave., Richmond, 1 story, 12-classroom steel concrete block Miravista School, to Indenco, 656 31 St., Oakland, **$392,958.** Bids 9/30. CD 9/9.

●Calif., Sacramento — STATE CAPITOL — State Div. Architecture, P. Wks. Bldg., Sacramento, general contract 6 story, bsmnt., rein.-con., structural steel, 340,000 sq. ft. state Capitol Annex, to Swinerton & Walberg, 225 Bush St., San Francisco, **$4,155,729***** heating, ventilating and air-conditioning, to S. Glen Hickman, 3170 E. 11 St., Los Angeles, **$610,752***** plumbing, to Victory Eng. & Electric Co., 1245 Riverside Dr., Los Angeles, **$574,275.** Grand total $5,340,755 Bids 11/15. CD 11/22, under LB.

Colo., Denver—SCHOOL—School Dist 1, 414 14 St., general contract 2 story, 81,965 sq. ft., Gilpin School, 29 and Stout Sts., to Mead & Mount Constr. Co., Denver National Bank Bldg., Denver, **$737,000.** Bids 11/9, awarded 11/18. CD 11/6, under LB.

Ga., Atlanta—SCHOOL—Fulton Co. Bd. Educ., Courthouse, West Side School, to A. Farnell Blair Co., 1306 Spring St., N. W., **$467,500.** Bids 11/1, awarded 11/15. CD 11/11, under LB.

●Ill., Maplewood (East St. Louis P. O.)—SCHOOL—School Dist. 187 of St. Clair Co., c/o Bd. Educ., Harold Anglim, secy., general contract 2 story, bsmnt., brick, rein.-con. Cahokia Commonsfield High School, to John J. Keeley Constrg. Co., 2030 State St., East St. Louis, **$1,791,906.** Bids 10/10, CD 10/25, under LB.

Ia., Mt. Pleasant—HOSPITAL—Bd. State Institutions, E. 12 and Court Sts., Des Moines, general contract patients bldg. and altering present bldg., at Mt. Pleasant State Hospital, to Carl A. Nelson & Co., Burlington, **$908,890.** Bids 11/8. CD 11/17, under LB.

La., Crowley—GYMNASIUM—Acadia Parish School Bd., Crowley, gymnasium at Crowley High School, to Gravier & Harper, Box 1391, Alexandria, **$317,473.** Bids 11/8. CD 1/21/48.

●Mass., Salem—HOUSING—City of Salem Housing Auth., City Hall, veterans housing, Loring Ave., to Construction Units, Inc. 294 Washington St., Boston, **$1,182,231.** Bids 11/16, awarded 11/18. T. F. McDonough, 25 Huntington Ave., Boston, archt.

Mich., Mt. Pleasant—PHYSICAL EDUCATION—Central Mich. College, Mt. Pleasant, general constr. physical educ. bldg., to Strom Constr. Co., 625 N. W. 1 St., Grand Rapids, **$657,900.** Awarded 11/15. Roger Allen 1126 Grand Rapids National Bank Bldg., Grand Rapids, archt. CD 4/28/47.

Mich., Warren—SCHOOL—Warren Consolidated School Dist., 2 story, 230x325 ft., irregular shaped, rein.-con., masonry, structural steel high school, to Atkin Fordon Co., 7360 W. Chicago Ave., Detroit, **$750,000.** Awarded 11/15. Lowell M. Price, 605 W. 11 Mile Rd., Royal Oak, archt.

Minn., Minneapolis—CLASSROOM—University of Minn., 323 Admin. Bldg., general contract classroom on Main Campus, to C. F. Haglin & Sons, 123 Bryant Ave. N., **$767,714,** Bids 11/9. CD 11/16

Miss., Laurel — HOSPITAL — Jones Co., Laurel, hospital, to Batson-Cook Co., West Point, Ga., **$858,940.** CD 11/9, under LB.

Mont., Galen—GARAGE—State Bd. Examiners, Helena, Garage at State Tuberculosis Sanitarium, to Carson Constr. Co., First National Bank, Helena, **$82,440,** Bids 11/9. CD 10/11.

✦N. M., Las Cruces—SUPPLY and WAREHOUSE—U. S. Eng., Box 1538 Albuquerque, supply and warehouse, Serial No. ENG-29-005-50-8, to Womack Constr. Co., P. O. Box 1190, Phoenix, Ariz., **$177,500.** Bids 10/6. CD 10/17, under LB.

●N. Y., Syracuse—HOSPITAL—Veterans Admin., Vermont Ave between H and I Sts., N. W., Wash. 25, D. C., general contract Veterans Admin. Hospital, to John A. Johnson & Sons, Inc., 270 41 St., Brooklyn, **$7,146,-000.** Bids 10/25. CD 10/27, under LB.

Pa., Phila.—POLICE STATIONS—Dpt. Pub. Safety, City Hall, 2 police stations, one 39 St. and Lancaster Ave. and other 11 and Winter Sts., to Rothman Constr. Co., Inc., 1512 Walnut St., **$261,108.** Bids 10/31. Phila. Dpt. of City Architecture, c/o owner, archts.

Pa., West Chester—HIGH SCHOOL—West Chester Boro School Dist., West Chester, high school, to Wark & Co., 1700 Sansom St., Phila., **$757,770.** Bids 10/20. CD 10/31, under LB.

Tenn., Copperhill—HIGH SCHOOL—Polk Co., Copperhill, high school and Turtletown School, to George W. Reagan Co., 510 Grainger Ave., Knoxville, **$296,220.** Bids 11/17. CD 11/19.

Tenn., Memphis—SCHOOL—Bd. Educ., 317 Poplar Ave., Sumner-Graham Grade School, to H. F. Vann & Sons, 1089 Galloway Ave., **$272,-521.** Bids 10/28. Estes W Mann & Wm. C. Mann Assoc., Shrine Bldg., archts.

W. Va., Athens—SCIENCE—West Virginia Bd. Educ., c/o contractor, science bldg. at Concord State College, to B. F. Parrott Co., Boxley Bldg., Roanoke, Va., **$313,922.**

B. C., Vancouver — UNIVERSITY — Pub. Wks., Parliament Bldgs. Victoria, 1st unit of project, center portion with V-shaped 1 story area and 4 story, 51x84 ft. wing, University of British Columbia, to Commonwealth Constr. Co., Ltd., 670 Taylor St., **$654,210.** Bids 9/21, awarded 11/18. CD 9/28, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

After December 1

●O., Cleveland—DEPARTMENT STORE—Federal Department Stores, 444 Willis St., Detroit, Mich., 1 story, bsmnt, 100x300 ft. department store and paving at Lee and Harvard Rds. $1,000,000. Charles N. Agree, 1140 Book Bldg., Detroit, Mich., archt. CD 6/16.

December 12

Ill., Chicago—COMMUNITY, etc.—St. Anselm Parish, 6045 S. Michigan Ave., 1 story, 25,000 sq. ft. steel, brick, concrete, stone community bldg. and gymnasium. $250,000. Extended date. CD 11/17.

●Tex., Fort Sam Houston—HOUSING—Commanding Officer, 4th Army, Fort Sam Houston, construct, manage and finance, 500 housing units for Junior Officers and ranking Non-Commissioned Officers, $4,300,000. CD 10/27.

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December 14

N. Y., New York—GYMNASIUM—Mount St. Michaels Academy, 4300 Murdock Ave., Zone 66, 2 story gymnasium, Nereid and Murdock Aves. $700,000. Extended date. CD 11/9.

Tex., San Antonio—CLASSROOM ADMINISTRATION—Trinity University, 3115 W. Ashby St., 2 story, 60x383 ft., 44,000 sq. ft., concrete, steel combination classroom-administration, pier and beam fdn., etc. $350,000. Plans deposit $25. Harvey P. Smith & Assoc. Natl. Bank Commerce Bldg., archts. Frank T. Drought, 117 W. Pecan St., and Fred N. Severud, 415 Lexington Ave., New York 17, N. Y., engrs. CD 11/7.

December 15

Conn., West Hartford — CHURCH — St. Thomas the Apostle Roman Catholic Parish, West Hartford, 1 story, bsmnt., brick, stone church superstructure, Farmington Ave. and Dover St. $250,000. John J. McMahon & Russell F. Hills, 187 Barker St., Hartford, archts. CD 1/9/48.

Ont., Toronto—STORES—M. M. Dillon & Co., engrs. Bank of Toronto Chambers, London, four 1 story, 45x120 ft., structural steel, brick, steel retail stores in Toronto Area for Brewers Warehousing Co. Ltd. 19 Richmond St. W. Approx. $500,000.

December 21

La., Baton Rouge—CHURCH, etc.—Rodman & Murrell, archts., 713 Reymond Bldg., church, rectory, garage, convent, covered passages, etc., E. Blvd., for St. Agnes Roman Catholic Church, Rev. Patrick Gillespie, pastor, 908 E. Blvd. Plans deposit $50.

January 2

●**Ill., Chicago**—APARTMENTS—McCormick Management Corp., 332 S. Michigan Ave., Zone 4 (selected bidders) two 14 story, steel, brick, glass, concrete, 228 unit apartments. $5,500,000. CD 4/20.

About January 15

Miss., University — ALUMNI — University of Miss. Alumni Assn., c/o R. W. Naef, archt., Masonic Temple, Jackson, alumni bldg. $300,000.

January 17

Calif., Fort Ord—HOUSING—Dpt. Army, Post Adjutant, Ft. Ord and Commanding General, 6th Army, Presidio of San Francisco, San Francisco, construct, finance, manage 500 unit housing units. CD 10 26.

Bids Asked

●**Ill., Chicago** — ORPHANAGE — Angel Guardian Orphanage, 2001 W. Dearborn St., Zone 26, general contract, six 2 story, 40x150 ft. orphanage bldgs. $1,000,000. Herman J. Gaul & Son, 228 E. Superior St., Zone 11, archts.

Ill., Chicago — APARTMENTS — Pottawattomie Apartments, Inc., Wolcott and Rogers Sts., Zone 26, 4 story, 45 unit 90x125 ft. brick, concrete 3 apartment, 1 store. A. Nelson, 1319 Chicago Ave., Evanston, archt.

N. Y., Schenectady — HOUSING — Dpt. of Army, The Pentagon, Wash. 25, D. C., construct, manage and finance, 50 rental units for Schenectady General Depot.

O., Toledo—HOUSING—Dpt. of Army, The Pentagon, Wash. 5, D. C. construct, manage and finance 52 rental units for Rossford Ordnance Depot.

Pa., Chambersburg — HOUSING — Dpt. of Army, The Pentagon, Wash. 25, D. C., construct, manage and finance, 48 housing units for Letterkenny Ordnance Depot.

SOON LETS CONTRACT

Ala., Montgomery—APARTMENT DEVELOPMENT—John Mathews, c/o Horace Weaver, archt., Swann Bldg., Birmingham, soon lets contract apartment development. Approx. $500,000.

Conn., Canaan—TELEPHONE EXCHANGE—Southern N. E. Telephone Co., 22 Church St., New Haven, soon lets contract 2 story, 40x70 ft., brick, steel, concrete, stone telephone exchange. $250,000 Douglas Orr, 36 Grove St., New Haven, archt. CD 7/5.

Ky., Louisville — HOSPITAL — Red Cross Hospital Assn., 1436 S. Shelby St., soon lets contract 4 story, brick hospital addn. $450,000. Thos. J. Nolan & Sons, 311 Ky. Home Life Bldg., archts. CD 5/7/48.

Md., Baltimore—CONVENT—Hall, Border & Donaldson, archts., 2111 N. Charles St., soon lets contract, 2 and 3 story, masonry convent, school and auditorium, for St. William of York Church, Edmondson Ave. and Cooks Lane. $250,000.

Mo., St. Joseph—GARAGE, etc.—Dillwood Motor Co., 1805 Frederick St., soon lets contract garage, sales and service bldg. $100,000. Eckel & Aldrich, Corby Bldg., archts.

Pa., Doylestown—HOSPITAL—Fred F. Martin, archt., West and Paine Sts., soon lets contract hospital addn. for Doylestown Emergency Hospital, Doylestown. $250,000. CD 3/27/47.

Tex., Fort Worth—HOUSING—Fort Worth Quartermaster Depot, Fort Worth, soon lets contract construct, manage, finance 30 housing units for Military Personnel. $250,000. CD 11/21.

Tex., Wichita Falls—STUDENT UNION, etc.—Hardin College, Wichita Falls, soon lets contract student union, $250,000; 2 story, 90x257 ft., brick, tile dormitory, concrete frame and fdn. $250,000. Ray C. Arnold, 329 Allison-Duncan Bldg., archt. CD 9/12.

Wash., Richland — THEATER — Midstate Amusement Corp., Walla Walla, soon lets contract 125x185 ft., rein.-con. theater, $250,000. Plans deposit $50. Extended date. H. Brandt Gessel & Assoc., Seil Bldg., Walla Walla, archts. CD 11/9.

Wis., Milwaukee — ADMINISTRATION SCHOOL—Marquette University, 615 N. 11 St., Zone 3, soon lets contract 5 story, 65x138 ft., rein.-con., brick, stone business administration school, Brust & Brust, 135 W. Wells St., Zone 3, archts.

Ont., Sudbury—NURSES RESIDENCE, etc.—P. J. O'Gorman, archt., 209 Mackay Block, soon lets contract 6 story, 50x170 ft., rein.-con. nurses residence and school at St. Joseph's Hospital, for Grey Nuns of the Cross, Sudbury. Approx. $800,000. CD 7/12/46.

Ont., Toronto—STORE—K. W. Bash, c/o Loblaws Groceteries Co., Ltd., Fleet and Bathurst Sts., soon lets contract 1 story, bsmnt., structural steel, concrete block, brick store Coxwell Ave., near O'Connor Dr. $250,000.

LOW BIDDERS

La., Lafayette—HOTEL—Evangeline Hotel, Lafayette, Nov. 18, 6 story, rein.-con. addn. to Evangeline Hotel, from Horace B. Rickey, Lafayette. $274,662. CD 10/25.

Md., Takoma Park — CHURCH, etc. — Our Lady of Sorrows Parish, 320 Ethan Allen Ave., 1 story, brick, concrete, block, steel church and school, from W. M. Chappell, 1219 Good Hope Rd. S. E., Wash., D. C. $253,151. Ross & Walton, 3510 R. I. Ave., Mt. Ranier, archts.

N. J., Trenton—SCHOOL—Holy Angels Roman Catholic Church, 1715 S. Broad St., rejected bids Oct. 7, school. $275,000. Will re-advertise. 11/28.

N. M., Santa Fe—HOTEL—Santa Fe Land Improv. Co., 80 E. Jackson Ave., Chicago 4, Ill., Sept. 16, 70-room La Fonda Hotel addn., from Martin K. Eby Constr. Co., 610 N. Main St., Wichita, Kan. $569,000. Est. $550,000. CD 9/13.

CONTRACTS AWARDED

●**Ala., Birmingham**—APARTMENT UNITS—Town House Apartments c/o contractor, 136 apartment units, Realty Constr. Co., 507 S. 18 St., Approx. $1,500,000. Stevens & Wilkinson, 157 Luckie St. N. W., Atlanta, Ga., archts.

Ala., Florence—STORE—Sears, Roebuck & Co., Ponce De Leon Ave., Atlanta, Ga., department store, to Daniel Constr. Co., P. O. Box 1511, Birmingham. CD 11/7. CD 10/25.

Calif., Concord — RESIDENCES, etc. — Gosforth & McGraw, 247 Gregory Lane, 84 residences and garages Lots 206-289, in Gregory Gardens, Pleasant Hill Tract. Owner builds. $580,000.

Calif., Hayward — RESIDENCES — Grant Land Co., 315 13 St., Oakland 67 six room residences Tract 936, to Tarman & Bechtel, 315 13 St., Oakland. Approx. $402,000.

Calif., Los Angeles—SUNDAY SCHOOL—First Presbyterian Church of Hollywood, 1760 N. Gower St., 2 story, 110x180 ft., rein.-con., brick Sunday School, 1760 N. Gower St., to Don S. Eby, 1201 W. Manchester, Approx. $260,000. Bids 9/28, awarded 11/14. CD 9/27.

Calif., Montebello—STORE—De Pash Constr. Co., 801 W. Whittier Blvd., 1 story, 90x300 ft., frame, stucco store. Owner builds. $250,000.

Calif., San Francisco — APARTMENTS — Kirkham Heights Co., 514 Mission St., nine 2 story and three 3 story apartments, Williams & Burrows, Inc., 10 California Dr., Burlingame. Approx. $561,500. Angue McSweeney, 514 Mission St., archt.

●**Calif., San Francisco**—APARTMENT—1080 Chestnut Corp. c/o Empire Constr. Co., 344 Harriet St., 14 story apartment, to Empire Constr. Co., 344 Harriet St., Approx. $1,000,000.

Calif., Watsonville — RESIDENCES — Ben Aaron, Watsonville, 55 residences, Beck Ave., to Wm. Bone, Watsonville, Approx. $500,000.

Calif., Whittier — DWELLINGS — George Winther & S. Farr, 54 frame, stucco dwellings, to Reams & Jess, 17055 S. Lakewood Blvd., Bellflower, Approx. $500,000.

●**Del., Wilmington** — HOUSING — Community Housing Associates, Inc., c/o John E. Healy & Sons, 707 Tatnall St., housing, 26 and 28 Sts., separate contracts. $1,000,000. Pope & Kruse, 1108 Washington St., Wilmington, archts.

D. C., Wash.—OFFICE—American Legion, 777 Meridian St., Indianapolis, Ind., office, to Hauser Constr. Co., 1909 Chestnut St., Phila., Pa. $700,000. Bids 11/4. CD 10/20.

Fla., Miami — RESIDENTIAL DEVELOPMENT—Fad Construction Corp., c/o R. M. Nordin, archt., 3650 S. Dixie Hy., several residential developments. Owner builds. Approx. $250,000.

Fla., Miami Beach—APARTMENT UNITS—Marshall Apartments, Inc., c/o contractor, 60 apartment units, to Giller Contg. Co., Inc., 523 Michigan Ave., Approx. $300,000.

●**Fla., Tampa**—HOUSING—Tampa Bay Camden Apartment Development Corp., construct, manage and finance 550 housing and apartment units at MacDill Field, for Dpt. of Air Force, to Paul Smith Constr. Co., 310 N. Roma Ave. Approx. $1,000,000. CD 11/15.

Ga., Atlanta—HOMES—W. D. Rice, 505 Cameron St. S. E., 35 homes, Maynard Terrace, Owner builds. $250,000.

●**Ga., Atlanta**—APARTMENT UNITS—Sylvan Circle Apartments, c/o contractor 296 apartment units, to Goode Constr. Co., Johnston Bldg., Charlotte, N. C., $1,750,000. CD 1/21.

Ill., Chicago—OFFICE—Bell Savings & Loan Assn., 79 W. Monroe St., Zone 3, remodeling 1st, 2nd, 3rd floors of office bldg., air-conditioned, to Campbell-Lowrie & Lautermilch, 400 W. Madison St., Zone 6. $250,000. Awarded 11/10. Johnson & Johnson, 111 W. Washington St., archts.

Ill., Chicago — APARTMENTS — East Banks Street & Bldg. Corp., c/o Leo S. Hirschfeld, archt., 120 S. LaSalle St., Zone 3, 16 story, bsmnt., steel, concrete, brick, stone apartment, to Peter Hamlin Constr. Co., 9 S. Clinton St., Zone 6. $800,000. Awarded 11/8. CD 7/19.

Ill., Chicago—OFFICE—Foote, Cone & Belding, 155 E. Superior St., Zone 11, modernizing 6 story warehouse into office bldg., to E. H. Marhoefer, Jr. Co., 505 N. LaSalle St., Zone 10. $500,000. Bids 10/31, awarded 11/10. Harper Richards, 160 E. Superior St., designer. CD 10/24.

●**Ill., Fort Sheridan**—HOUSING—Dpt. Army, Fifth Army, 1660 E. Hyde Park Blvd., Chicago, construct, manage and finance 50 housing units, to C. Wallace Johnson, Inc., 7 South Dearborn St., Chicago, $450,000.

Ill., Glenview—MARKET—Cain & Culhane, 4545 N. Broadway, Chicago, Zone 40, 100x400 ft. super market, separate contracts. $300,000. Clarence L. Dahlquist, 430 N. Michigan Ave., Chicago, Zone 11, archt. CD 8/9.

●**Kan., Olathe**—DWELLINGS—Tom C. Congleton, 711 Midland Bldg., Kansas City, Mo., 100 dwellings, to Herb Rose, Olathe. Approx. $1,000,000.

Kan., Wichita — CLUB HOUSE — Wichita Country Club, 840 N. Yale St., club house, to Dondlinger & Son Constr. Co., 1206 E. Lincoln St. $367,900. Neville, Sharp & Simon, Midland Bldg., Kansas City, Mo., archts.

La., Arabi—HOUSING—Livewell Homes, c/o contractor, 50 houses, to Martin S. Rotschild, 4303 Thalia St., Arabi, approx. $250,000.

La., New Orleans—OFFICE—Lowich Properties, Inc., c/o contractor, office, to R. P. Farnsworth & Co., 1515 S. Salcedo St., approx. $500,000.

●**Md., Towson** — APARTMENTS — Rodgers Forge Apartments, Loch Raven Village, Towson, nineteen, 2 story, brick, block bldgs., Sect. 2, Rodgers Forge and Dumbarton Rds., to Rodgers Forge Constr. Co., Loch Raven Village, Towson. $1,006,382.

Mich., Detroit — APARTMENTS — Harry Lichtermann, 2006 Penobscot Bldg., 4 story, 40 unit, 78x272 ft., rein.-con., structural steel, masonry Franklin Apartments, to Lerner-Linden Constr. Co., 9940 Roselawn St. $380,000. Awarded 11/11. Wiedmaier & Gay, 112 Madison Ave., archts.

Minn., Duluth—CHURCH, etc.—First Lutheran Church, 315 North 1 Ave. E., general contract 2 story, bsmnt., 132x136 ft. church and Sunday school, 11 Ave. E. and Superior St., to London Bldg. Co. Kline-Linin Co. 409 First National Bank Bldg., $308,746. CD 10/19.

Miss., Jackson—HOUSES—Choctaw Village, c/o Reid-McGee & Co., 516 E. Capitol St., 118 houses Owner builds. $750,000.

Mo., St. Louis — ADMINISTRATION — St. Louis Municipal Theatre Assn., J. M. Lashly, pres., Mutual Beisman mgr., 1876 Arcade Bldg., 812 Olive St., Zone 1, 2 story admin. bldg., to Dickie Constr. Co., Loudermann Bldg., 317 N. 11 St., Zone 1, approx. $250,000. Bids 11/3. CD 10/24.

●**N. J., Barrington**—RESIDENTIAL DEVELOPMENT—Thomas R. Edwards & Assoc., Munn Ave., Haddonfield, residential development, separate contracts. $1,600,000. Dante J. D'Anastasio, 1815 Federal St., Camden, archt.

N. J., Bridgeton — THEATRE — Atlantic Theatre, Inc., 16 and Market Sts., Phila., Pa., Theatre to Stone Orange Co., 1717 Brandywine St., Phila., Pa., $250,000. Bids 10/1. CD 9/28.

N. J., Burlington—RESIDENTIAL DEVELOPMENT—Sunny Field, Inc., 5 and Main Sts., Roebling, residential development, separate contracts. Approx. $250,000.

N. J., Princeton—RESIDENTIAL DEVELOPMENT—Theodore Potts, Inc., 55 Harrison St., residential development, Ewing St. and also in Princeton Twp., separate contracts. Approx. $250,000.

N. J., Salem—RESIDENTIAL DEVELOPMENT—Owner, c/o contractor, residential development, Yorke and Kent Sts., to William W. Fowser, 199 Wesley St., Salem, $750,000.

N. J., Vineland—APARTMENT DEVELOPMENT—Harry Millhouse, Lamond Rd., Norma, apartment development, 4 and Central R.R. of New Jersey, separate contracts. Approx. $250,000. Edwards & Green, Broadway and Carman St., Camden, archts.

N. J., Westmont—RESIDENTIAL DEVELOPMENT—Owner, c/o Lester H. Wecknesser, 150 E. Wallworth Park, Haddonfield, residential development, Graisbury Ave., to Nelson Constr. Co., 202 Kings Ave. $800,000.

N. J., Westmont—RESIDENTIAL DEVELOPMENT—Woodbury Bldg. Corp., 40 S. American St., Woodbury, residential development, separate contracts. $850,000.

N. J., Woodbury — RESIDENTIAL DEVELOPMENT—Robert Budd, 65 Hessian Ave., residential development, Washington Ave., etc., separate contracts, Approx. $250,000.

●**N. J., Woodbury**—RESIDENTIAL DEVELOPMENT—Woodbury Bldg. Corp., 40 American St., residential development, separate contracts. $1,300,000.

N. M., Santa Fe—HOTEL—Santa Fe Land Improvement Co., 80 E. Jackson Blvd., Chicago 4, Ill., 70 room La Fonda Hotel addn., to Martin K. Eby Constr. Co., 610 N. Main St., Wichita, Kan., **$569,000.** Bids 9/16. CD 11/23, under LB.

N. Y., Bayside—HOUSES—**Lestin Homes,** Inc., c/o William Sambur, archt., 160-16 Jamaica Ave., Jamaica, 45 one-family houses, 218 and 219 Sts., 56 and 58 Aves. Owner builds. Approx. **$337,500.**

●**N. Y., Bayside** — HOUSES — Morton Bros. Corp., Queens Blvd., Jamaica, 152 houses in area bounded by Bell Blvd., 213 St, 67 and 69 Aves. Owner builds. **$1,280,000.** Burton Assoc., 163-18 Jamaica Ave., Jamaica, archt.

●**N. Y., Forest Hills**—APARTMENTS—Jesse & Sidney Segal, c/o Philip Birnbaum, archt., 303 W. 42 St., New York, Zone 18, 6 story apartments known as Fontaine Gardens, 67 Rd. and Queens Blvd., Owner builds. **$1,500,-000.**

N. Y., Rego Park—APARTMENT—B. & D. Realty Corp., c/o M. Rothstein & Son, archt., 186 Joralemon St., Brooklyn, 6 story apartment, 63 Rd. and 99 St., separate contracts. **$485,000.** CD 9/6.

N. C., Charlotte—DOCTORS—Doctors' Building, Inc., Dr. Joseph A. Elliott, pres., Professional Bldg., 9 story, 60,000 sq. ft. doctors bldg., Kings Dr., to J. A. Jones Constr. Co., Inc., 209 W. 4 St., **$500,000.** Louis H. Asbury, 121 Brevard Court, archt.

O., Brooklyn Village—RESIDENCES—Midvale Investment Co., c/o J. Carney, atty, 308 Leader Bldg., Cleveland, 32, one story, bsmnt., brick, block residences, Delara Ave., separate contracts, $350,000. Daman Welsh Assoc., 926 Engineers Bldg., Cleveland, archts.

●**O., Cleveland** — RESTAURANT — Hanna Building Co., 630 Hanna Bldg., restaurant alterations, addns. in Hanna Bldg., 1422 Euclid Ave., to Albert M. Higley Co., 2036 E. 22 St., Approx. **$1,000,000.** Awarded 11/1.

●**O., Columbus** — DWELLINGS — Columbus AMVETS Homestead Assn., Inc., 6 W. Frambes St., 741 low cost dwellings on 202 acre plot between Sunbury and Holt Rds. and Woodlawn Ave. and Mock Rd., Mifflin Twp., to Arlington Homes, Inc., 500 W. Stanwood Ave. Approx. **$5,700,000.** Awarded 11/11.

●**O., Columbus** — HOUSING — Norton Homes, Inc., c/o Charles F. Vatterott, pres., 10126 St. Charles Rock Rd., St. Louis, Mo., 650 single houses on 127 acre site, E. Broad St., formerly Norton Field airport. Owner builds. **$5,000,000.**

●**O., Garfield Heights**—HOMES—Elmer De Fagie, 8805 McCracken Blvd., 100 frame, ranch type homes, Clarmont Blvd., Southern, Reindeer and Garland Aves., separate contracts. **$1,000,000.**

O., Mayfield Heights — RESIDENCES — Orchard Park Building Co., 1145 Sunset Rd., between 1½ story frame residences, Orchard Park Blvd., separate contracts. **$333,-000.**

O., Parma—HOMES—Milrose Constr. Co., 13484 Cedar Rd., Cleveland Heights, 92, 1½ story, bsmnt, frame homes, Thornton-Pelham, Maple Crest, Morningside and Yorkshire Rds., separate contracts. **$920,000.**

O., Toledo—HOSPITAL—Robinwood Hospital, Wm. Pioch, chn. Bldg. Com., 2517 Robinwood Ave., general contract 4 story hospital addn., incl. 80 beds, maternity dept. etc., remodel present hospital, to George W. Luthrop & Sons, Inc., 1510 Montcalm St. Approx. **$300,000.** Bids 9/2, awarded 11/16. CD 8/10.

●**Ore., Salem**—APARTMENT—Salem Investment Co., c/o V. N. Jones & Assoc. archts., Republic Bldg., Seattle 1, Wash., reinforced apartment, to Republic Constr. Corp., 1618 N. Las Palmas St., Hollywood, Calif. Approx. **$1,000,000.**

●**Pa., Broomall** — RESIDENCES — Irving A. Miller, West Chester Pike, residential development, Springfield Rd., etc., separate contracts. **$1,300,000.**

Pa., Coatesville—RESIDENCES—Norman E. Donohue, 1028 E. Main St., residential development, Walnut St., etc., separate contracts. **$250,000.**

Pa., Colwyn — RESIDENCES — Adam B. McClatchy, 69 and Walnut Sts., Upper Darby, residential development, 3 St., etc., separate contracts. **$250,000.**

●**Pa., Lansdowne** — APARTMENT — Wildman Arms Apartments, 86 W. Baltimore Ave., apartment development, 86 W. Baltimore Ave., to Turner Constr. Co., 1500 Walnut St., Phila. **$2,000,000.** Aaron Colish, 117 S. 17 St., Phila., archt. CD 10/20.

Pa., Phila. — RESIDENCES — George Betz, 7501 Central Ave., residential development, Burholme Ave., etc., separate contracts. **$250,-000.**

Pa., Phila. — SYNAGOGUE — B'Nai Aaron Synagogue, 5225 Woodcrest Ave., synagogue, to Lash Constr. Co. Inc., 1518 Walnut St., **$250,000.** CD 8/22/47.

●**Pa., Phila.**—RESIDENCES—C. & M. Building Corp., c/o general contractor, residential development, Wynnefield Ave., to Louis Feldsher & Son, 2534 W. Thompson St., **$1,000,000.** Lewis J. Cowan, 1505 Pine St., archt.

Pa., Phila. — OFFICE — Central Assoc. of The Miraculous Medal, 100 E. Price St., office, to D. W. O'Dea, 420 W. Duncannon St., **$250,000.**

●**Pa., Phila.**—RESIDENCES—Daniel A. Dintenfass, 6905 Castor Ave., residential development, Tyson Ave., Disston and Eastwood Sts., separate contracts. **$1,000,000.** Christian H. Fries, 3701 N. Broad St., archt.

Pa., Phila.—RESIDENCES—Samuel L. McGulken, 5267 Roosevelt Blvd., residential development, Woodfern Rd., etc., separate contracts. **$250,000.**

Pa., Phila. — RESIDENCES — Montague Homes, Inc., 7037 Castor Ave., residential development, Shisler St., separate contracts. **$375,000.**

Pa., Phila.—RESIDENCES—Harry N. Shender, 850 Longshore St., residential development, Horrocks St., etc., separate contracts. **$250,000.** G. Harold Murphy, 1621 Seller St., archt.

Pa., Phila.—STORE and OFFICE—Singer Sewing Machine Co., 149 Broadway, New York, N. Y., store and office, 5622 Germantown Ave., to Irwin & Leighton, 1505 Race St., **$250,000.** Savery, Scheetz & Gilmour, 1520 Locust St., archts.

Pa., Phila.—RESIDENCES—Stenton Builders, 7150 Ogontz Ave., residential development, Woolston Ave., separate contracts. **$250,000.**

Pa., Pittsburgh—APARTMENT, etc.—Penn Negley, Inc., R. D. 1, Library, 6 story, bsmnt., 64x104 ft., brick, block 50-family apartment and garage, S. Negley and Ellsworth Sts., to P. S. Edwards Co., R. D. 1, Library. **$395,000.** Phillip Friedman, 121 S. Negley Ave., archt.

Pa., West Chester — APARTMENT — Stenning Hills Corp., Scarlett Bldg., Kennett Square, apartment, Walnut St. and Rosedale Ave., separate contracts. **$250,000.** William L. Redditt, 25 Tenby Rd., Llanerch, archt.

R. I., Barrington—HOUSING—John Hazelton, 88 Williams Ave., East Providence, 36 one story bsmnt, 25x30 ft., frame houses, Elizabeth St. Owner builds. **$288,000.**

R. I., Johnsson — CHURCH — St. Rocco Roman Catholic Parish, Rev. A. J. Susin, pastor, Clemence St., Cranston, 2 story, bsmnt., 65x138 ft., brick, stone church, Atwood Ave., to Gilbane Building Co., 90 Calverly St., Providence. Approx. **$400,000.** Bids 9/23. CD 9/21.

S. C., Greenwood—HOUSING—J. A. Gresham & Assoc., Greenwood, 50 housing units. Owner builds. Approx. **$300,000.**

Tenn., Memphis — APARTMENT — Tillman Cove Apartments, c/o James Keltner, Tillman St., 116 apartment units. Owner builds. Approx. **$300,000.**

Tex., Bellaire — HOUSING — R. A. Carlson, 6900 Old Main St. Rd., Houston, 2nd housing, own forces. **$275,000.** CD 11/17.

Tex., Dallas—DWELLINGS—Bailey Johnson Co., Lake June Rd., 100 dwellings, ½ of 3rd sect. of Pleasant Grove Zone, own forces. Approx. **$600,000.** CD 11/15.

Tex., Fort Worth—BUSINESS—A. C. Luther Realty Co., 6351 Camp Bowie Blvd., 70x200 ft. business bldg., incl. theater, 2 story, 50x240 ft. office bldg., brick, tile, concrete constr. at 6000 Camp Bowie Blvd. Owner builds. **$700,-000.** Pettigrew & Worley, 160 Avery St., Dallas, archts.

Tex., Houston — APARTMENT — Ewing Apartments, Inc., 2nd Natl. Bank Bldg., 42 unit brick apartment, concrete frame and fdn., Chenevert St. and Ewing Ave. to Holliday & Mason, 700 Norhill St. Approx. **$450,-000.** Lloyd & Morgan, 4605 Montrose St., engrs.

Tex., Houston—HOUSING—Foster-Marshall, M & M Bldg., housing, own forces. **$275,000.** CD 11/11.

●**Tex., Houston**—DWELLINGS—Meadowbrook Building Co., 7801 Howard Dr., 200 dwellings, Sect. G-2 of Meadowbrook sub-division. Owner builds. Approx. **$1,300,000.** CD 11/14.

Tex., Houston—DWELLINGS—Scott Terrace Housing Corp., 6016 Scott St., 125 dwellings, own forces. Approx. **$950,000.** CD 11/17.

Tex., San Angelo — RESIDENCES — Frank Robertson, Majestic Bldg., 72 residences, day labor. Approx. **$425,000.**

Tex., San Antonio—RESIDENCES—Richard Gill Co., Gunter Bldg., 100 addnl. residences off Basse Rd., to West & Kaulbach, Gunter Bldg., Approx. **$745,000.** CD 11/11.

Va., Norfolk—HOMES—Construction Associates, Inc., 803 Crawford St., 36 homes. Owner builds. **$252,000.**

Va., Norfolk — HOMES — Julian Holding Corp., c/o contractor, 67 homes, to Allan Constr. Co., Norfolk. Approx. **$333,000.**

Wash., Tacoma—HOUSES—M & M Constr., Inc., 10017 Bridgeport Way, 61 houses, day labor. **$393,450.**

●**Ont., Eastview**—HOSPITAL—Sisters of Sagasse, 400 Montreal Rd., 5 story T-shaped 200-bed Hospital St. Louis de Montford, Montreal Rd., to William D' Aoust, 286 Montreal Rd., Approx. **$2,000,000.** J. S. LeFort, 18 Rideau St., Ottawa, archt.

Ont., Hamilton—HOUSES—Elliott Constr. Co., Ltd., 7 Huchson St. S., 60 houses, Brucedate Ferrell and Queensdale Ave., own forces, Approx. **$300,000.**

INDUSTRIAL BUILDINGS

BIDS ASKED

December 7

●**Tenn., Memphis**—WAREHOUSE, etc.—International Harvester Co., c/o Walk C. Jones-Walk C. Jones, Jr., archts., 1215 Poplar St., 450 x 508 ft. warehouse and office. **$1,000,000.**

Ont., Toronto—WAREHOUSE—J. B. Parkin Assoc., archts., 717 Church St., 2 story, bsmnt., 200x200 ft., brick, tile warehouse, Wellington St. W., for Stedman Brothers, Ltd., 27 Wellington St. W., Approx. $400,000. CD 11/19/47.

December 8

W. Va., Fairmont—WAREHOUSE—Owens-Illinois Glass Co., Fairmont, metal siding Warehouse 7. $700,000.

December 9

Ill., Chicago — FACTORY — O'Bryan Bros., 4220 W. Belmont St., Zone 41, 1 story, 17,000 sq. ft. steel, brick, concrete factory addn., $100,000. G. E. Pearson, 4437 W. Krightwood St., Zone 39, archt.

December 13

Kan., Ulysses—WAREHOUSE, etc.—Pioneer Co-operative Assn., Ulysses, warehouse and garage, $75,000. Plans deposit $10. Southwest Engineers, Inc., 510 Transit Tower, San Antonio, Tex., engr. CD 10/17.

December 15

Ga., Atlanta—WAREHOUSE, etc.—International Harvester Co., c/o Fred V. Prather, archt., 8 S. Michigan Ave., Chicago, Ill., warehouse and office. Approx. $68,000.

December 16

●**Ill., Chicago** — FACTORY — Central Waxed Paper Co., 5659 W. Taylor St., Zone 44, 1 story, 150,000 sq. ft., steel, brick, concrete factory, Roosevelt Rd. near Laramie Ave. $1,000,000. Battey & Childs, 231 S. La Salle St., Zone 4, engrs.

Bids Asked

Ky., Freeburn — TIPPLE, etc. — Red Arrow Coal Co., Freeboro, tipple and chute.

N. J., Paulsboro—STAVE—Socony Vacuum Oil Co., Paulsboro, state bldg. alterations. Approx. $68,000. J. H. Wright, c/o owner, ch. engr. CD 2/6/46.

O., Columbus—FACTORY—Massey-Harris Co., 1721 Packard Ave., Racine, Wis., 1 story, brick factory with air-conditioned office, Sells Rd., northwest of here. **$300,000.**

Pa., Phila.—PLANT—Clover Beef Co., 905 Girard Ave., plant. Approx. **$68,000.** Morris Fruchtbaum, 328 Chestnut St., engr.

Pa., Phila.—REFRIGERATION, etc.—M. Lapin & Sons, 324 Callowhill St., refrigeration bldg. and smoke house. $70,000. Morris Fruchtbaum, 328 Chestnut St., engr.

SOON LETS CONTRACT

Conn., Bridgeport — WHEELER BLDG. — Edith C. Gram, et al, c/o P. M. Leavitt, 31 Milk St., Boston, Mass., soon lets contract 4 story Wheeler Bldg. reconstruction, alterations, Main St., $425,000. H. C. Elton, 1188 Main St., archt.

La., New Orleans—WAREHOUSE—Weiss & Silverstein, archts., 611 Common St., soon lets contract 1 story, 140 x 155 ft. brick, steel, warehouse, at Blenville and N. Scott Sts., for Walgreen Drug Store. CD 6/6/46.

Pa., Phila.—GARAGE—Earl P. Allabach, engr., 16 S. Broad St., soon lets contract bakery, garage and maintenance bldg. for Mrs. Smith's Pie Co., 963 N. 9 St. $250,000. CD 11/3.

Pa., Pittsburgh — POWER PLANT — H. J. Heinz Co., 1062 Progress St., soon lets contract power plant alterations, general, structural, equip., piping, etc. $200,000. Peter Loftus, 613 First Natl. Bank Bldg., engr. CD 12/10/48.

●**Pa., West Point**—RESEARCH LABORATORY—W. Stuart Thompson & Phelps Barnum, archt., 250 Park Ave., New York, N. Y., soon lets contract research laboratory, for Sharp & Dohme, 640 N. Broad St., Phila. $4,000,000. CD 11/10.

S. C., Columbia—WAREHOUSE—Heyward S. Singley, archt., 1508 Washington St., soon lets contract warehoue, for George D. Lott, c/o archt.

Ont., Niagara Falls — PLANT — A. O. Williams, mgr., North American Cyanamid Ltd., 1 Fourth Ave., soon lets contract 1½ story, 45x120 ft., steel, brick, tile, steel assembly plant. Approx. $125,000. R. I. Spencer, 32 William St., St. Catherines, engr. CD 11/15/45.

Ont., Toronto — WAREHOUSE, etc. — N A. Armstrong, archt., 19 Melinda St., Toronto, soon lets contract 2 story, bsmnt., 20x100 ft., brick, cut stone, tile warehouse and showroom addn., for Singer Sewing Machine Co., 127 Peter St., Approx. $175,000.

LOW BIDDERS

Pa., Phila.—WAREHOUSE—Sears Roebuck & Co., 4640 Roosevelt Blvd., Nov. 8, 1 story, 168x218 ft. and 144x168 ft., brick, block warehouse addns., from James J. Clearkin, 4450 Leiper St. **$300,000.** CD 11/2.

Tenn., Nashville — PLANT — Newspaper Printing Corp., c/o Marr & Holman, archts., Stahlman Bldg., Nov. 10, newspaper mechanical bldg. from V. L. Nicholson Co., Nashville Trust Bldg., **$765,000.** CD 10/25.

Tex., Beaumont — WAREHOUSE — Sears, Roebuck & Co., 500 Orleans St., warehouse, from Elmer Wooldridge, Potr Arthur, **$289,-000.** CD 11/10.

Tex., San Antonio—PLANT—Federal Envelope Co., 535 S. Flores St., Nov. 18, envelope plant, from Forgy Constr. Co., Box 6521 Alamo Heights Station. **$99,527.** Est. $85,000. CD 11/16.

Tex., Waxahachie—SHOP—Dick Hipp Buick Co., Waxahachie, rejected bids Nov. 9, auto shop, display, parts. L. B. **$78,150.** CD 11/18, under LB.

CONTRACTS AWARDED

Calif., Culver City—ELECTRONIC—Hughes Aircraft Co., Culver City, 2 story, steel, electronic bldg. addn., laboratory and office, to The Wm. A. Simpson Constr. Co., 816 W. 5 St., Los Angeles, Approx. **$500,000.** H. L. Gogerty, 323 W. 8 St., Los Angeles, archt.

Calif., Richmond—WAREHOUSE—Standard Oil Co. of California, 841 Standard Ave., warehouse. Owner builds. **$75,000.**

Fla., Jacksonville—WAREHOUSES—John E. Price, 1404½ Stockton St., Zone 4, to Okeechobee Constr. Co., 1404½ Stockton St., Zone 4, 2 story, concrete, masonry warehouse, Dennis St. at A. C. L. Railroad, leased to Kraft Foods Co., **$150,000;** 1 story, concrete brick warehouse, Dennis St. at A. C. L. Railroad, leased to Acosasti Eng. Co., **$75,000;** 1 story, concrete, brick warehouse, Dennis St. at A. C. L. Railroad, leased to Bethlehem Steel Corp. **$75,000;** 5 story, concrete, steel warehouse, Dennis St. at A. C. L. Railroad, occupied by Cohen Brothers Department Store, **$300,000.** Grand total $600,000. Awaraded 11/15.

●**Fla., Palatka**—POWER PLANT — Florida Power & Light Co., Ingraham Bldg., Miami, Zone 1, complete electric power plant of 66,000 kw. in two units of 33,000 kw. capacity each on St. Johns River in East Palatka. Owner builds, **$10,000,000.**

Ga., Atlanta — WAREHOUSE — Memorial-Pearl Corp., 160 Peachtree St., N. W., warehouse. Owner builds. **$90,000.**

Ill., Chicago—PLANT—Hawthorne Mellody Farms, 4233 W. Chicago St., Zone 51, 18,000 sq. ft., steel, brick, concrete, milk processing and packaging plant, to E. Bakken, 3520 N. Knox St., Zone 41. **$90,000.** D. Robertson, 2242 Grove St., Zone 5, archt.

Ill., Chicago—FACTORY—Republic Moulding Co., 6467 Avondale St., Zone 30, 1 story, bsmnt., 60x100 ft. factory, to B. J. Begnell Co., 1005 W. Belmont St., Zone 13, **$75,000.** Awarded 11/10. Fox & Fox, 30 N. LaSalle St., Zone 2, archts.

Ind., Michigan City—MACHINE SHOP, etc. —Audio Industries, Inc., Portis Bldg., 1 story, 62x157 ft., concrete blocks, structural steel, machine shop and office, to Schumaker Constr. Co., 1411 E. Michigan St., approx. **$70,000,** Awarded 11/15.

Ia., Fort Dodge—FACTORY—Certain-Teed Products Co., 208 S. La Salle St., Chicago, Ill., factory addn., to Turner Constr. Co., 105 W. Adams St., Chicago, Ill. **$450,000.** J. C. Van Balen, 228 N. LaSalle St., Chicago, Ill., archt.

La., Ashville—PLANT—LeRoy Gin Co., Ashville, cotton gin plant. Owner builds. **$80,000.** CD 9/19.

Md., Baltimore — WAREHOUSE, etc. — Clendenin Bros., Inc., 105 S. St., 1 story, masonry, steel warehouse and factory, 4309 Erdman Ave., separate contracts. **$68,000.** CD 11/3.

Mich., Birmingham—WAREHOUSE—Dearborn Motors Corp., 15059 Woodward Ave., Highland Park, 3 story, bsmnt., 62x450 ft. office bldg., 1 story, 240x100 ft. concrete, masonry, warehouse, structural steel and reinforcement, excavation, sewerage, to Cunningham Limp Co., 3087 West Grand Blvd., Detroit. **$2,100,000.** Awarded 11/10. CD 6/22.

Mich., River Rouge—GARAGE, etc.—Sun Oil Co., 2117 National Bank Bldg., Detroit, 1 and 2 story, 132x133 ft., masonry, rein.-con., structural steel garage and office, to H. L. Yokes Co., 1000 Wayside Rd., Cleveland, O. **$160,000.** Awarded 11/10.

Mich., Wayne—PLANT—Garwood Industries, Wayne, 1 story, 50 x 675 ft. and 50 x 250 ft. irregular shaped, structural steel, masonry, concrete mfg. plant addns., excavation and sewerage, to Darin & Armstrong, Inc., 2040 Penkell Ave., Detroit. **$600,000.** Awarded 11/15.

Neb., Lincoln—PRINTING PLANT—State Journal Printing Co., c/o contractor, printing plant, to W. J. Assenmacher Constr. Co., 625 N. 17 St., Approx. **$75,000.** Bids 11/4. CD to 9/27.

Neb., Omaha—WAREHOUSE and GARAGE —Omar, Inc., 1916 Harney St., branch warehouse and garage, 26 and Deer Park Blvd., to Parsons Constr. Co., 512 Grain Exchange Bldg., St. **$70,000.** Bids 11/14. CD 11/7.

N. J., Bridgeton—PLANT—Aberfoyle Mfg. Co., Fidelity Phila. Trust Bldg., Phila., Pa., mfg. plant alterations, modernization, to Rocco Martelli Pennsgrove Approx. **$250,000.** The Ballinger Co., 121 N. Broad St., Phila., Pa., archt.

N. J., Camden—FACTORY—L. Merochnik Sons, Inc., 312 Liberty St., 1 story, 80x200 ft., masonry factory, to S. Levy Co., 1498 Broadway, Approx. **$68,000.** CD 9/9/48.

N. J., Freehold—PLANT—A. & M. Karagheusian, Inc., Freehold, 3 story, 84x250 ft., brick, steel mfg. plant addn., to Turner Constr. Co., 1500 Walnut St., Phila., Pa., **$150,000.** H. E. Corl, 1505 Race St., Phila., Pa., engr.

N. J., Millville—SHOWROOM, etc.—Nathan Joseph, 4 and Smith Sts., showroom and service bldg., to Harry Spiegel, Almond Rd., Norma, **$70,000.** John B. Fletcher, 547 Landis Ave., Vineland, archt.

N. J., Trenton—DISTRIBUTING, etc.—William Freihofer Baking Co., Union Blvd. and Quebec St., Allentown, Pa., 1 story, 150x156 ft., speedwall tile distributing and office bldg., to L. C. Bowers & Sons, 180 Nassau St., Princeton, **$80,000.** Raymond A. Bowers, 180 Nassau St., Princeton, archt. CD 11/1.

N. Y., Long Island City—FACTORY—Barricini, Inc., Jack Barricini, pres., 2219 41 Ave., 3 story, 100x150 ft. rein.-con., brick factory adn., 22 St. and 41 Ave., to Turner Constr. Co., 420 Lexington Ave., New York, Zone 17. Approx. **$400,000.**

N. C., Charlotte — SALES AND DISTR. BRANCH—Kraft Foods, 1620 W. Morehead St., sales and distr. branch bldg., to J. A. Jones Constr. Co., 209 sq. ft. 4 St., **$100,000.** Louis H. Asbury & Son, 121 Brevard Court, archts.

O., Fairport — PLANT — Dasher Rubber & Chemical, Fairport Harbor, processing plant addn., High St., separate contracts. **$250,000.**

Pa., Coatesville—WAREHOUSE, etc.—Lipkin Furniture Co., 137 E. Lincoln Hy., rebuilding warehouse and store, to W. J. Elliott, 11 S. 1 St., Phila., archts.

Pa., Conshohocken—REPAIR SHOP—E. F. Moore, 12 Ave. and Lafayette St., 1 story, 70x120 ft., block, steel auto repair shop, to Joseph Mandes, Jr., Palmer Apartments, Wayne, **$68,000.** George A. Greeby, Montgomery Trust Arcade, Norristown, engr.

Pa., Easton — MANUFACTURING — Victor Balata & Textile Belting Co., Eastern, 2 story, bsmnt., 50x107 ft. and 1 story, 60x140 ft., brick mfg. bldg., to Lauter Constr. Co., 112 S. 16 St., Phila. **$250,000.** Bids 10/18. CD 10/19.

Pa., Phila.—WAREHOUSE—Abbott Laboratories, 1400 Sheridan Ave., North Chicago, Ill., 1 story, 119x122 ft. warehouse, 33x37 ft. office, brick, steel constr., to Robert E. Lamb & Son, Shattuck, c/o owner, ch. engr. **$150,000.** E. L. Shattuck, archt.

Pa., Phila.—SHOP, etc.—William S. Bender, 9341 Basildon Ave., 1 story, masonry repair shop, office and showroom addn., separate contracts. Approx. **$68,000.**

●**Pa., Phila**—PLANT—Edward G. Budd Mfg. Co., 2450 Hunting Park Ave., casting plant. CD 10/20.

Pa., Phila.—WAREHOUSE PLATFORMS, etc.—Gulf Oil Corp., 30 St. and Penrose Ave., 1 story, 24x124 ft., 50x200 sq. ft. marine warehouse, concrete, steel platforms and railroad crossover, to Hughes Foulkrod Co., 1505 Race St. Approx. **$100,000.** CD 10/31.

Pa., Phila.—MANUFACTURING, etc.—Millburn, Inc., 6419 Market St., 1 story, 30,000 sq. ft., brick, block mfg. and office bldg., separate contracts. Approx. **$68,000.** James G. Ludwig, 6403 Market St., Upper Darby, archt.

Pa., Phila.—TERMINAL and OFFICE—Motor Cargo, Inc., 1700 Germantown Ave., 1 story, 60x221 ft. truck terminal, 30x70 ft. office, brick constr., to Harry Alterman, 1021 W. Wyoming Ave., **$100,000.**

Pa., Phila.—WAREHOUSE, etc.—E. R. Sabin Co., 4710 Market St., warehouse and office alterations, to J. Y. Loux, 3934 Elser St., Yeadon, archt.

Pa., Phila. — MANUFACTURING — United Steel Barrel Co., Water and Mifflin Sts., 1 story, 75x320 ft. masonry mfg. bldg., to Fleming Co., 1717 Sansom St. **$150,000.**

Pa., Phila.—FACTORY—John A. Zimmerman & Sons, Inc., Erie and Castor Aves., 1 story, 63x109 ft. brick, cinder block factory addn., 20x20 ft. penthouse, to Haverstick-Borthwick Co., 1505 Race St., **$100,000.** The Ballinger Co., 121 N. Broad St., archt.

R. I., Warwick—SALES and SERVICE, etc. —Williams Corner Garage, 3128 Post Rd., 2 story, 50x100 ft., brick, cinder block auto sales and service garage and showroom, to Leroy Erickson, Greenwood Ave., Approx. **$68,000.** I. Frederick Norton, West Mystic, Conn., archt.

Tenn., Humboldt—PLANT—Federal Chemical Co., Humboldt, fertilizer mixing plant addn. Owner builds. **$75,000.**

Tenn., Memphis—LAUNDRY—Banner Laundry Cleaner, c/o contractor, laundry, to Sam P. Maury Constr. Co., 554 Adams St. Approx. **$68,000.**

Tenn., Memphis—SALES and SERVICE—Hinton & Hutton Implement Co., c/o contractor, equip. sales and service to Tri-State Constr. Co., Three Sisters Bldg., Approx. **$125,000.**

Tenn., Nashville—PLANT—Bramlett Printing Co., c/o contractor, printing plant addn., to E. E. Crain Co., 302 42 Ave. N. Approx. **$75,000.**

Tex., Corpus Christi—TERMINAL EXPANSION—Magnolia Petroleum Co., Shell Rd., terminal expansion, own forces. **$85,000.** CD 4/26.

Tex., Houston—PLANT—Emerson Meat Co., 512½ Gable St., meat plant freezer addn., own forces. **$75,000.**

Tex., Houston—SHOP—Equipment, Inc., 1922 Edmundson St., 1 story, steel shop, own forces. Approx. $70,000. Harry A. Turner, 2503 Robin Hood St., archt.

Tex., Houston—SHOP—R. B. Everitt & Co., 3118 Harrisburg Blvd., shop, Purchase and Hire. **$65,000.**

Tex., Houston — WAREHOUSE — Roddis Lumber & Veneer Co., 2426 Sabine St., warehouse, to R. E. Sullivan Co., 821 **First Natl.** Bank Bldg. Approx. **$75,000.** Zimmerman & Bible, 500 Stuart Ave., engrs. and archts.

Tex., Lubbock—WAREHOUSE—Nunn Electric Supply Corp., Lubbock, warehouse, to Tom G. McAbbe, 1412 Texas Ave., **$82,975.** Haynes & Kirby, 19 and Dixie Dr., archts.

Tex., Tyler—WAREHOUSE—Ira P. Hildebrand, Tyler, warehouse, to W. W. Walton, 1904 Beldemere St. Approx. **$100,000.** CD 11/17.

Wis., Cudahy — OFFAL CHILL — Cudahy Bros. Co., Cudahy, 1 story, steel, brick offal chill bldg., concrete fdn. and floor, to E. C. Knuth & Co., 2919 W. Fond du Lac Ave., Milwaukee, Zone 8. Approx. **$100,000.**

Wis., Eau Claire — FACTORY — Shedd & Brown, Eau Claire, 1 story, 100x241 ft. factory, to Hoeppner-Bartlett Co., 631 E. Madison St. Approx. **$100,000.**

Wis., Manitowoc — WAREHOUSE — F. S. Kersker Co., 707 Buffalo St., 1 story, part bsmnt., 70x225 ft., steel, concrete blocks warehouse, concrete fdn. and floor, to Hoffman Bros., Inc., Two Rivers. F. W. Raeuber, 1024 S. 9 St., archt.

Wis., Menasha — BUILDING — Geo. Banta Publishing Co., 450 Ahnaip St., 1 story, 128x127 ft., steel, brick, tile building addn. concrete fdn. and floors, to Ben. H. Ganther Co., 78 State St., Oshkosh, R. N. Le Vee & Assoc., 203 E. College Ave., Appleton, archts. Bids 11/10. CD 11/17.

Wis., Menasha — PLANT — Northwestern Engraving & Electrotype Co., 200 Washington St., 1 story, 75x265 ft., steel, brick, stone engraving and electrotype plant, concrete fdn. and floors, to Fluor Bros. Constr. Co., 48 Otter St., Oshkosh, R. N. LeVee & Assocs., 203 E. College Ave., Appleton, archts.

Wis., Watertown—SHOP—Carl West, 696 Margaret St., 1 story, 36x100 ft., steel, concrete blocks, auto body shop, concrete fdn. and floors, day labor, R. S. Podoiske, 604 Harold St., engr.

Ont., Toronto — PLANT, etc. — O'Keefe's Brewing Co., Ltd., 297 Victoria St., superstructure 5 story, 113x230 ft., rein. con. cut stone, brick bottling plant and shipping bldg., Dundas St. W. and St. Patrick St., to Anglin-Norcross Ontario Ltd., 57 Bloor St. W., Approx. **$800,000.** T. G. Ferguson, c/o owner, engr.

UNCLASSIFIED

BIDS ASKED

December 5

N. Y., New York—PIER—Dpt. Marine & Aviation, Pier A, North River, Zone 4, reconstruction of north portions bulkhead shed of Pier New 32 at foot of Canal St., North River, Manhattan Boro. Plans deposit $4. CD 7/28/44.

December 7

Ala., Fairhope—GAS SYSTEM—City, natural gas sys. J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, engr. CD 11/14.

Iowa—RURAL DISTRIBUTION LINES—Southwestern Federated Power Co-operative, Creston, Sect. 12, constr. approx. 20,339 ft. 8 in. cl. watermains from City of Creston to owner's power plant. Stanley Eng. Co., Hershey Bldg., Muscatine, engr. CD 7/9/48.

Md., Baltimore—SWIMMING POOLS—City, City Hall, Riverside Park Swimming Pool, Bath House, facilities, $150,000, Clifton Park Swimming Pool, $200,000. Plans deposit $25 each. J. E. Greiner Co., 1201 St. Paul St., engr. R. E. L. Williams, 410 Municipal Bldg., bldg. constr. engr. CD 10/41/43.

N. S., Black Point—WHARF—J. M. Somerville, secy. Dpt. of Wks., Hunter Bldg., Ottawa, Ont., wharf repairs and imprvs., Approx. $48,000. Plans deposit $20. Extended date. R. Blais, c/o owner, engr. CD 11/16.

December 8

Colorado—RURAL DISTRIBUTION LINES —San Isabel Electric Assn., Pueblo, 24.3 mi. rural distr. lines, Pueblo Co., $60,000. C-B Eng. Co., 25 S. Grove St., Denver, engr.

Fla., Milton—GAS SYSTEM—City, natural gas sys. J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, Ala., engr. CD 11/18.

December 12

Calif., Sacramento—SWIMMING POOL—Sacramento City School Dist., 1200 21 St., swimming pool at Sacramento Junior College. Approx. $50,000. Plans deposit $20. Harry J. Devine, 1012 J St., archt. CD 4/7/47.

N. Y., Long Island City—PLAYGROUND—Supt. School Bldgs., Design & Construction, 49 Flatbush Ave. exten., Brooklyn, Zone 1, general contract plumbing and drainage playground or P. S. 111, 37 Ave., between 13 and 14 Sts. Plans deposit $2 each.

December 13

†**Wyoming**—TRANSFORMERS, etc.—Bureau Reclamation, Dpt. Interior, Cody, transformers, lightning arresters, circuit breaker, disconnecting fuse, hookstick and fuse remover.

for Hot Springs County R. E. A. substation, Transmission Division, Missouri River Basin Proj., Spec. R 6-Cod-10 (Region 6). L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch engr.

December 15

Missouri—RURAL DISTRIBUTION LINES Citizens Electric Co-operative, Ste. Genevieve, labor only, 117 —28 mi. rural dist. lines, Cape Girardeau Co., $55,000; 186.07 mi. rural dist. lines, Genevieve Co., $75,000; 187.92 mi. rural dist. lines, Perry Co., $75,000. Drazen & Asso., 8135 Forsyth Blvd., St. Louis, engr. CD 6/10/48.

December 20

†Idaho—VALVES, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del f.o.b. cars shipping point or f.o.b. cars Mountain Home, valves, cocks, fabricated pipe, threaded pipe and fittings for Anderson Ranch Power Plant, Boise Proj., Spec. 2842. L. N. McClellan, c/o owner, engr.

†Louisiana—OPERATING MACHINERY—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, furnishing, installing operating machinery and electrical sys. for Calcasieu Lock, located near intersection of Calcasieu River and Intracoastal Waterway at about Mile 238 of the waterway, about 10 mi. southwest of Lake Charles, Calcasieu Parish.

†Montana—OUTDOOR-TYPE AUTOTRANSFORMER, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Havre, outdoor-type autotransformer, outdoor station-type lightning arresters, grounding transformer, outdoor shunt reactor, automatic voltage-regulating transformer, outdoor distribution transformer, outdoor power circuit breakers, outdoor disconnecting switches, outdoor station type lightning arresters designed for suspension mounting and suitable for service on 161,000 volt, 3 phase, grounded-neutral circuit, Havre Substation, Fort Peck Proj., Spec. 2840. L. N. McClellan, ch engr.

Bids Asked

Kan., Scott City—POWER PLANT—Frank Horton & Co., consult., engrs., Lamar, Mo., 85x100 ft., steel, corrugated asbestos power plant, foundations for three 2300 kw. engine generator units, plumbing, sewerage, drainage, yard piping, foundations for fuel oil tanks cooling tower, substation structures and apparatus, for Wheatland Electric Co-operative Scott City.

O., Delaware—SWIMMING POOL—Salvation Army, Advisory Bd., 138 E. State St., Columbus, 40x100 ft. outdoor concrete swimming pool at Greenwood Lake Camp, northeast of here. Burgess & Niple, 584 E Broad St., Columbus, engrs.

SOON LETS CONTRACT

Ill., Chicago—PARAPET WALL REPLACEMENT—Continental Illinois National Bank & Trust Co., 231 S. LaSalle St., Zone 4, soon lets contract parapet wall replacement, $700,000. Graham, Anderson Probst & White, 80 E. Jackson St., Zone 4, archts.

LOW BIDDERS

Calif., San Francisco—SIGNAL SYSTEM—Dpt. P. Wks., City Hall, No. 7, traffic signal sys. on Market St. from Castro to 10 Sts., Spec 20,606, from R. Flatland, 1000 Portola Dr. **$91,000.** CD 11/7.

Colo., Denver—RECREATION BUILDINGS —City and Denver Co., City-County Bldg., rejected bids Nov 7, 4 municipal recreation buildings in Curtis Park, 32 and Chapa Sts., Lincoln Park, 11 and Osage Sts., Columbus Park, W 39 and Osage Sts. and Globeville Park, 49 and Logan Sts. Will re-advertise.

South Carolina—RURAL DISTRIBUTION LINES—Blue Ridge Electric Co-operative, Inc., Pickens, Nov. 14, 98.94 mi. rural distr. lines, Oconee and Anderson Counties, from Little Electric Co., Hartsville. **$113,746.** CD 11/9.

Ont., Hamilton—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, La Salle Park Wharf exten from McNamara Constr. Co., Ltd., 42 Industrial St., Leaside. Approx. **$76,999.** CD 11/2.

Que., Marsonl—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. wharf exten., from McNamara Constr. Co., Ltd., 42 Industrial St., Leaside. Approx. **$242,149.** CD 11/1.

CONTRACTS AWARDED

†California—STEEL TOWERS—Bureau Reclamation, Box 2511, Sacramento, single circuit steel towers for 230 kilovolt transmission lines, Perkins-Tracy Line, Central Valley Proj., Spec. R262, to Bethlehem Pacific Coast Steel Co., 20 and Illinois Sts., San Francisco, **$159,-371.** CD 6/27 under LB.

Calif., Long Beach—GAS MAINS—City, repairing, replacing 27,000 ft. gas mains and services, to Signal Pipe Line Corp., 2398 California Ave., Zone 6, **$75,000.** Awarded 11/15. CD 12/6/44.

Ind., Speedway—GRANDSTAND—Indianapolis Motor Speedway Corp., 124 N. Capitol Ave., Indianapolis, 80x150 ft., rein.-con grandstand, to H. D. Tousley Co., Inc., 552 Massachusetts Ave., Indianapolis, approx. **$70,000.** Awarded 11/14. E. R. Ellis, c/o contractor, engr. CD 10/1/48.

Kansas—RURAL DISTRIBUTION LINES—Northwest Kansas Electric Co-operative, Bird City, 308 rural distr. lines, Rawlins and Cheyenne Counties, Proj. Kansas 49D-1, Cheyenne, to A. F. Reis, National Bank Bldg., Topeka. **$313,051.** Bids 11/3. CD 10/17.

Md., Baltimore—TROTTING TRACK GRADING, etc.—Baltimore Trotting Races, Inc., E. H. Beer, pres, Chamber of Commerce Bldg., grading, drainage, groundwork, and fence, Pulaski Hy. and Martin Blvd., near here to C. J. Langenfelder & Son, 8427 Pulaski Hy. CD 10/10.

Mass., Boston—CONDUIT—Commonwealth of Massachusetts, Metropolitan Dist. Comn., 20 Somerset St., Boston, marginal conduit between Mt. Vernon and Dartmouth Sts., West Roxbury, to West Constr. Co., & Julian Constr. Co., 119 Landseer St., West Roxbury, **$749,-000.** Bids 9/8. CD 9/15.

Miss., Gulfport—MOTOR COURT—Alamo Plaza Courts, c/o contractor, motor court, to Wm. McGrady, Waco, Tex., approx. **$100,-000.**

Missouri—RURAL DISTRIBUTION LINES —Barry Electric Co-operative, Cassville, 69.48 mi. rural distr. lines and converting 6.5 mi. lines, Barry and MacDonald Counties, to Wedding Constr Co., Cloverport, Ky. **$98,000.** Bids 10/17. CD 10/14.

Neb., Beatrice—DRIVE-IN THEATER—Central Amusement Co., 1200 W. Court St., drive-in theater. Owner builds. **$60,000.**

†N. M., Los Alamos—REHABILITATION, etc.—U. S Atomic Energy Comn., Los Alamos, third increment, misc. rehabilitation, general remodeling golf course addn., heating sys., incl. remodeling Bldg. T-15, Inv. No. 291-50-12, to D. W. Falls, Los Alamos, Lot 1 **$87,828.** Bids 11/3. CD 10/17.

N. Y., New York—RECREATION CENTER —Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, general contract, heating and ventilating, plumbing and electrical work for recreation center in St. Mary's Park, St. Ann's Ave. and St. Mary's St., Bronx Boro, Contr. X-45-147, to Rubin Constr. Corp., 11 W. 42 St., Zone 18, **$807,402.** Bids 10/11. CD 10/24, under LB.

Pa., Perkasie—MAUSOLEUM—Owner, c/o general contractor, mausoleum addn., to Frank J. Boyles, 346 Delaware Ave., Lansdale, Approx. **$68,000.**

S. D., Beresford—ELECTRIC SYSTEM—City, electric sys. exten., to Fairbanks Morse & Co., 902 Harney St., Omaha, Neb., **$112,867.** Bids 11/8 Fulton & Cramer, 922 Trust Bldg., Lincoln, Neb., engrs. CD 10/19.

●Texas-Ohio—PIPELINE—Mid Valley Pipeline Co. (Sun Oil Co.), 1608 Walnut St., Phila. 3, Pa., and Standard Oil Co. of Ohio, 3002 Broadway, Cleveland 16, O., 30,000,000 sq. ft. Vitron underground pipe wrap for 857 mi. crude oil pipeline from Longview Tex. to Lima, O., to Glass Fibers, Inc., Waterville, O. CD 4/25.

Texas—PIPELINE—Texas-New Mexico Pipe Line Co. 720 San Jacinto St., Houston, 40 mi. 10¾ in. crude oil pipeline, Gail area, to Carl H. Dunn, Burkburnett Bldg., Fort Worth. Approx. **$625,000;** 16 mi. 6⅝ in. crude oil line, 5.41 mi. 4½ in. line, Big Spring area, to Wright Constr Co., Lovington, N. M. Approx. **$165,000.** CD 6/7/46

●†Texas—RAILROAD RELOCATION—U. S. Eng., 606 Santa Fe Bldg., Galveston, relocation of M. K. & T. Ry. tracks and facilities in vicinity Whitney Dam Proj., DeLeon River, near Whitney CIVENG-41-243-50-41, to Winston Bros. Co., 1470 Northwestern Bank Bldg., Minneapolis, Minn., **$1,830,966.** Bids 10/13. CD 10/21, under LB.

Tex., Corpus Christi—GAS LINES—City, c/o Gas Dpt., addnl. natural gas lines, Purchase and Hire. **$190,000.** CD 11/18/48.

Tex., Dallas—POWER LINES—Dallas Power & Light Co., Dallas Power & Light Bldg., electric power lines from Dist. Stations to new zones, force account. **$850,000.** CD 2/3, under Industrial Buildings.

●Tex., Houston—STADIUM—Rice Institute, M. Esperson Bldg., stadium, to Brown & Root, Inc., Box 3. **$2,225,000.** Bids 9/15 CD 9/8.

Tex., Lubbock—STREET LIGHTING—City, street lighting, Purchase and Hire. **$110,000.** G. K. Harris, c/o owner, city engr. CD 12/19/45.

Tex., San Antonio—PARKS—E. J. Burke & Sons, 4220 S. Zarzamora St., parks in Eastward extens. of Highland Hills to R. J. Lanham, 715 E. Josephine St., Approx. **$50,000.** Harmon & O'Donnell, Temple Court Bldg., engrs.

Wyo., Sheridan—STADIUM—Sheridan Athletic Assn., Sheridan steel, concrete stadium, to Pittsburgh-Des Moines Steel Co., 1015 Tuttle St., Des Moines, Ia., **$50,000.**

B. C., Victoria—DOCKS—Canadian National Rys., B. Wheelwright, ch. engr., 360 McGill St., Montreal, Que., general repairs and imprvs. to docks and dock area incl. dock walls and caissons repairs, new concrete retaining wall and asph. paving at Ogden Point in Victoria, to City Constr. Co., Ltd 107 E. 1 Ave., Vancouver, **$187,000.** Awarded 11/16.

Ont., Kitchener—AUDITORIUM—City, C. G. Lips, clk., 205 x 325 ft. 6,200 seating memorial auditorium in Knollwood Park, to Dunker Constr. Ltd., Dunker Bldg. Approx. **$900,000.** Jenkins & Wright, 200 Zellar Bldg., archts.

Proposal Advertisements see pp. 65 to 67

OFFICIAL PROPOSALS

Bids: December 20, 1949 **(447)**

Grading and Drainage

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 1

The work to be performed under this Contract involves embankment, grading, soil stabilization, construction of box culverts, railroad track supports and other minor structures, drainage, and other incidental work in connection with the construction of the New Jersey Turnpike through the lands of the Esso Standard Oil Company, Bayway Refinery, in the City of Linden, Union County, New Jersey.

Principal Items of work include:	
Excavation and Grading	675,000 Cu. Yds.
Vertical Sand Drains	218,000 Lin. Ft.
Concrete	5,800 Cu. Yds.
Structural Steel	160 Tons
Reinforcement Steel	92 Tons

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock on the morning of Tuesday, December 20, 1949 and thereafter in the Auditorium of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalifications of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after November 25, 1949 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Engineers, Edwards and Kelcey, Fredrick R. Harris, Inc. and O. J. Porter Co., Associated, 3 Williams Street, Newark, New Jersey.

Contract documents will be furnished on a deposit of $15.00 for each set not including the Plans showing the grading cross-sections and an additional deposit of $15.00 for each set of the Plans showing the grading cross-sections upon application to the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and such deposits will be refunded upon return of the contract documents in a good condition within 10 days after the opening of the proposals.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications form for Construction of the New Jersey Turnpike and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by *a certified check* drawn to the order of the New Jersey Turnpike Authority *and a proposal bond, each* for not less than five (5) per cent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00, and must be delivered with proposal on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal, and of special addressed envelope will be furnished on application. Proposals not enclosed in sealed special envelopes will be considered informal and will not be opened.

The Contracts will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

(Continued on page 66)

U. S. Government
(Continued from page 65)

Department of Commerce, Bureau of Public Roads, November 21, 1949. SEALED BIDS will be received at the office of the Bureau of Public Roads, c/o Acadia National Park Office, Bar Harbor, Maine, until 10:00 a.m., E.S.T., DECEMBER 20, 1949, for the construction of Project 10A2-10A3-10A5, Acadia National Park Hancock County, Main: Two Reinforced Concrete Structures with Stone Facing, total length 0.015 mile; and Roadwork, length 0.470 mile. The approximate quantities of the more important items are as follows: 15,630 cu.yd. Excvation; 1,330 cu.yd. Cement concrete; 162,000 lb. Reinforcing Steel; 765 cu.yd. Stone Masonry and 6,350 sq. yd. Sledged Stone Base Course. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or certified check made payable to the Treasurer of the United States will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained from the Bureau of Public Roads offices, c/o Acadia National Park Office, Bar Harbor, Maine, or 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Division Engineer. (448)

BIDS FOR ALTERING DREDGES—Memphis District, Corps of Engineers, P. O. Box 87, Memphis 1, Tenn. Sealed bids will be received here until 2:00 p.m., C.S.T., 15 December 1949, and then publicly opened, for altering and repairing U. S. Dredges Potter and Ockerson. Information on request. (443)

OFFICIAL PROPOSALS

Bids: December 15, 1949 (436)

Water Transmission Main

SEALED PROPOSALS

Sealed proposals for furnishing all labor and materials for the construction of a water transmission main, a distance of approximately 208,000 lineal feet from the water purification plant at Chester-Octoraro Lake, to the Chester-Harrison Hill Reservoir in Lancaster, Chester and Delaware Counties, Pennsylvania; will be received by the Executive Manager of the Chester Municipal Authority, at the Authority Office, 5th & Welsh Streets, Chester, Pennsylvania, up to 2:00 o'clock P.M., Eastern Standard Time, Thursday, December 15, 1949, at which time and place the proposals will be publicly opened and read aloud.

It is the intention to take bids for furnishing and installing the transmission main under two alternate plans of combinations of pipe sizes as outlined in the contracts listed below.

Proposals may be submitted for furnishing and installing the entire transmission main under Contract No. 15. Bids for furnishing and installing the transmission main in four sectional contracts will be taken as an alternate to the bid for the furnishing and installing the entire transmission main. These alternate bids are represented by Contract Nos. 16, 17, 18 and 19.

Sub-alternate bids under Contract Nos. 15, 16, 17, 18 and 19 for furnishing pipe only, and for installation of pipe only, may also be submitted.

ALTERNATE PLAN NO. 1—
(COMBINATION 42", 39", 36", 30" and 24" DIAMETER PIPE)

Contract No. 15—Furnishing and installing approximately 208,000 lineal feet of 42", 39", 36", 30" and 24" diameter pipe, fittings and appurtenances.

Contract No. 16—Furnishing and installing approximately 26,000 lineal feet of 42" diameter pipe, fittings and appurtenances.

Contract No. 17—Furnishing and installing approximately 65,000 lineal feet of 39" diameter pipe, fittings and appurtenances.

Contract No. 18—Furnishing and installing approximately 65,000 lineal feet of 39" diameter pipe, fittings and appurtenances.

Contract No. 19—Furnishing and installing approximately 52,000 lineal feet of 36", 30" and 24" diameter pipe, fittings and appurtenances.

ALTERNATE PLAN NO. 2—
(COMBINATION 42", 48", 42", 36", 30" and 24" DIAMETER PIPE)

Contract No. 15—Furnishing and installing approximately 208,000 lineal feet of 42", 48", 42", 36", 30" and 24" diameter pipe, fittings and appurtenances.

Contract No. 16—Furnishing and installing approximately 26,000 lineal feet of 42" diameter pipe, fittings and appurtenances.

Contract No. 17—Furnishing and installing approximately 65,000 lineal feet of 48" diameter pipe fittings and appurtenances.

Contract No. 18—Furnishing and installing approximately 65,000 lineal feet of 48" diameter pipe, fittings and appurtenances.

Contract No. 19—Furnishing and installing approximately 52,000 lineal feet of 42", 36", 30" and 24" diameter pipe, fittings and appurtenances.

Bids for each contract under both alternate plans may be submitted for the following kinds of pipe:

(a) Reinforced concrete pressure pipe
(b) Coated and lined steel pipe
(c) Cement lined cast iron pipe.

The work will be awarded as a whole to one bidder for the entire transmission main, or to more than one bidder under more than one contract, all as deemed to be in the best interests of the Chester Municipal Authority.

The Chester Municipal Authority reserves the right to select the Alternate Plan under which the work will be awarded, and the kind of pipe to be used under the accepted Alternate Plan.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the office of the Chester Municipal Authority or at the office of Albright & Friel, Inc., Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania, on or after November 25, 1949, and copies thereof may be obtained at either office upon a deposit of $40.00 for each set of documents applying to each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit will be returned to each actual bidder for one set of plans and other deposits will be refunded with a deduction of $20.00 to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond drawn to the order of the Chester Municipal Authority equal to five per cent (5%) of the amount of bid must be submitted with the proposal for each contract.

Each proposal must be sealed and marked with the applicable contract numbers, and Alternate Plan numbers, and addressed to the Chester Municipal Authority, c/o Clarence L. Conner, Executive Manager.

The Chester Municipal Authority reserves the right to reject any and/or all bids.

CLARENCE L. CONNER
Executive Manager

November 17, 1949

Bids December 28, 1949 (446)

Sewage Treatment Plant

THE BOROUGH OF NORRISTOWN
MONTGOMERY COUNTY
PENNSYLVANIA

Sealed proposals will be received by the Borough Secretary of The Borough of Norristown, City Hall, Airy and DeKalb Streets, Norristown, Pennsylvania until 4:00 o'clock P.M. Eastern Standard Time on the 28th day of December 1949, for the Construction of Alterations and Additions to the Sewage Treatment Plant and will be publicly opened and read at 8:00 o'clock P.M. in the Council Chambers.

Contract No. 1—General Construction
Contract No. 2—Plumbing
Contract No. 3—Heating
Contract No. 4—Ventilating
Contract No. 5—Electrical

Copies of drawings, specifications and other contract documents are on file and open to public inspection at the office of the Borough Secretary, City Hall, Norristown, Pa., and at the office of the Engineers, William A. Goff, Inc., Broad Street Station Building, Philadelphia 3, Pa. Complete sets of such documents, covering five contracts, may be obtained from the Engineers upon payment of $40.00 for each set. If documents are returned in good condition within ten days after opening of bids, $2.00 for each set will be refunded. If documents are not returned within time stated, the entire payment will be forfeited.

The right to waive any informality in any bid, to accept any bid, to reject any or all bids, or to award as deemed to the best interest of the Borough is reserved by the Borough Council of The Borough of Norristown.

No bid may be withdrawn within thirty (30) days after the scheduled closing time for receipt of bids.

Each proposal shall be accompanied by security in an amount of not less than five (5) percent of the total bid or bids, in the form and subject to the conditions provided in the Instructions to Bidders.

THE BOROUGH OF NORRISTOWN
William S. Bowen
Borough Secretary

Bids: December 2, 1949 (445)

Furnishing and Delivering Curb Cock Boxes, Roadway Boxes and Curb Box Extensions

WASHINGTON SUBURBAN SANITARY COMMISSION

Sealed proposals for furnishing and delivering one-thousand-five-hundred (1,500) curb cock boxes, two-hundred (200) roadway boxes, two-hundred (200) curb box extensions 12" long and two-hundred (200) curb box extensions 20" long, will be received in the office of the Purchasing Agent of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until 10:30 A. M. Eastern Standard Time, Monday December 12th, 1949 at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt (Chairman)
Leland G. Worthington
Warren Browning
Commissioners

Bids: January 9, 1949 (430)

Concrete Dam and Power Plant

Puerto Rico Aqueduct and Sewer Authority
Santurce, Puerto Rico

Sealed bids will be received by the Puerto Rico Aqueduct and Sewer Authority until 3 o'clock P.M., January 9, 1950, at the Office of the Authority in Santurce, Puerto Rico.

Copies of the plans and specifications may be examined and obtained at the office of the Puerto Rico Aqueduct and Sewer Authority, Santurce, Puerto Rico or at the offices of Buck Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York City upon deposit of Twenty-Five ($25.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within twenty (20) days after the date on which bids are received.

The work to be performed is divided into three (3) sections. The principal items of work are:

SECTION F The construction of a gravity type concrete dam about 210 meters long with a maximum height to spillway crest of about 18 meters together with concrete power plant structure, pumping station substructure, tail race, and installing Tainter gates.

SECTION G Furnishing C.I.F. San Juan, Puerto Rico 8 Tainter gates, each 39 feet wide by 30 feet high, with hoisting mechanisms and electrical control equipment.

SECTION H Furnishing C.I.F. San Juan, Puerto Rico 2 hydraulic turbines and 2—1,250 KVA electric generators.

Each proposal must be accompanied by a certified check or bid bond equal to 5% of the proposal. The certified check will be retained to pay for any damage or loss to the Authority, or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for fifteen (15) days after their receipt before awarding any contract and the right is reserved to waive any informalities, to accept any bid or to reject any or all of them.

PUERTO RICO AQUEDUCT AND
SEWER AUTHORITY
By SERGIA CUEVAS,
EXECUTIVE DIRECTOR
Buck, Seifert and Jost
Consulting Engineers

(Continued on page 67)

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS
(Continued from page 66)

Bids: December 22, 1949 (444)

Northeast Tunnel

CONTRACT SECTIONS 2, 3, 4 AND 5
FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN
CONTRACTS

DWS—29 A
DWS—29 B
DWS—29 C
DWS—29 D

Sealed proposals for the construction of Contract Sections 2, 3, 4 and 5 of the Northeast Tunnel will be received by the Board of Water Commissioners of the City of Detroit, at Room 506, Water Board Building, 735 Randolph Street, Detroit 26, Michigan, until 10:00 A. M. Eastern Standard Time, December 22, 1949, at which time and place they will be opened and read aloud. Proposals shall be addressed to the Board of Water Commisioners of the City of Detroit, and endorsed "Proposal for Contract No. DWS-29". Any proposal received after the time referred to above will be returned to the bidder unopened.

The work consists of the construction of four sections of the Northeast Tunnel, which will be 10 feet in inside diameter with plain concrete or brick masonry lining. Proposals may be submitted for any single section, for any number of sections in any combination, or for all sections. The approximate length of each section is as follows:

Section 2, 6,300 feet. Section 4, 5,000 feet.
Section 3, 4,500 feet. Section 5, 4,973 feet.

The Contract Documents, including Notice to Bidders, Form of Proposal and Contract, Plans and Specifications, may be examined during business hours at the office of the Department of Water Supply, Room 706, Water Board Building, Detroit, Michigan, and may be obtained upon making a deposit of Twenty-Five Dollars ($25.00) per set of complete Plans and Specifications which includes all four Sections, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty days after the bid date.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract or Contracts.

No proposal may be withdrawn for at least 60 days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept or reject any or all bids, should it deem it to be for the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
Carl J. Schoeninger, President
Edward C. Roney, Vice President
R. K. Williams
Oscar Wagner
L. G. Lenhardt, Superintendent,
General Manager and Chief Engineer
E. H. Bauer,
Acting Secretary

U. S. Government

U. S. ARMY, CORPS OF ENGINEERS, NEW ENGLAND DIVISION, Army Base, Boston 10, Mass. Inv. No. Eng-19-016-50-5—Sealed bids will be received at this office until 2:00 P. M., January 4, 1950, and then publicly opened for Construction of a Veterans Administration Hospital, 500 bed General Medical and 400 bed Tuberculosis, West Haven, Connecticut, in accordance with specifications and plans, copies of which are available at this office. Deposit required of $125.00 per set for blueprints, $40.00 for half-size reproductions, and $15.00 for specifications, in form of certified check or postal money order payable to "Treasurer of the United States". (435)

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

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(Classified Advertising)

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BUSINESS: :USED OR RESALE

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$1.20 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.
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The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
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POSITIONS VACANT

SALES ENGINEER—Young civil engineer with some experience in reinforced concrete design and construction for interesting world-wide new methods building. P-1424, Engineering News-Record.

REINFORCING BAR Estimators & Detailers. Location Southeast. Write giving past experience in detail, also salary required. P-1486, Engineering News-Record.

DIRT MOVING and grading foremen for work starting in January. Must know how to handle men and heavy dirt equipment. New Jersey location. Send full resume. P-1501, Engineering News-Record.

ENGINEER—STRUCTURAL or mechanical graduate for designing and estimating structural steel and industrial machinery for well-known New England Fabricating Company. A real opportunity for a young man with practical experience. Salary—open. Please reply giving full resume in strict confidence to P-1498, Engineering News-Record.

SANITARY ENGINEER Wanted—Manufacturer of waste treatment equipment with national acceptance requires skilled sanitary engineer for sales promotion work. Sanitary engineering experience, intimate knowledge of treatment processes essential. Must travel. Submit full particulars. P-1494, Engineering News-Record.

POSITIONS WANTED

MECHANICAL ENGINEER: 8 years chemical plant design and process engineering. 10 years diversified, maintenance, machine design and supervisory experience. PW-1311, Engineering News-Record.

CONSTRUCTION PROBLEMS — difficulties, unusual conditions, analyzed, solved, dams, tunnels, concrete structures, methods, estimates, quick action. PW-1334, Engineering News-Record.

DRAFTSMAN: HIGHWAY. Railroad Property maps, mine maps, etc. Good letterer. PW-1537, Engineering News-Record.

CIVIL ENGINEER. 12 years experience administrative and design. Specialized in general construction and airport design and field work. Desires contacts for airport design work. Specialty work considered on quotation basis. Work history furnished upon request. PW-1340, Engineering News-Record.

SALES EXECUTIVE: Reliable Phila. Business man 50. Now employed regional manager national company. Broad sales, management, and contact experience. Bondable, highest references. Excellent business and political connections Penna., New York, and New Jersey. Interested in permanent profitable connection only with well established company. PW-1338, Engineering News-Record.

CIVIL ENGINEER — Executive. Registered P.E., N Y Thirty-five years broad experience, about twenty of which in responsible charge field and office on highways, municipal and general construction in Latin America and Far East. Fluent Spanish. Excellent credentials. Available for foreign assignment. Write or wire Thuman, P. O. Box 126, Merritt Island, Fla.

STRUCTURAL ENGINEER, graduate, registered, 25 years design and construction subways, buildings, docks, foundations, statically indeterminate structures, etc., desires permanent responsible position. Will go anywhere. PW-1375, Engineering News-Record.

(Continued on page 68)

CITY OF GARFIELD
CITY CLERK'S OFFICE

Water Plant Superintendent

The Mayor and Council of the City of Garfield, Bergen County, New Jersey, desire to employ a full-time Water Plant Superintendent to take full charge of the City's Water Plant operations. One with engineering experience is preferred.

Applicants must possess sufficient qualifications to be able to obtain from the New Jersey State Department of Health a Water Superintendent's License, as is required of Superintendents under the State Health Laws. Salary is open and applicants are requested to specify salary expected.

Applications will be received at once and applicants will be interviewed by the Governing Body of the City on Monday evening December 12, 1949 at 8:00 P.M., in the City Hall, Outwater Lane, Garfield, New Jersey.

JOSEPH J. NOVACK
City Clerk

Garfield, New Jersey
November 18th, 1949

Chief Civil Engineer
WANTED

An excellent opportunity in an established west coast engineering firm for an exceptionally well qualified Graduate Civil Engineer, capable of taking charge of a Civil Department. Must possess comprehensive design experience and thorough knowledge of grading, drainage, roads, railroads, and utility layouts for municipalities.

In addition, applicant must have ability to discuss and develop prospective work with municipal, county and state authorities.

Submit photo with experience record covering above requirements in detail. Replies confidential.

P-1231, Engineering News-Record
621 S. Hope Street, Los Angeles, Calif.

POSITION AVAILABLE

Civil Engineering graduate with minimum 12 years' experience to supervise project engineers on building work, waste disposal and structural design. Scheduling experience also desirable. Location in East with established chemical company. Furnish detailed resume of experience and education, also salary requirements, in reply.

P-1420, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

SALES ENGINEER

National concrete specialty subcontractor desires outstanding man, knowledge concrete, ability to sell, handle construction projects, travel: salary plus commission later: age, education, health, experience, salary earned and required.

SW-1226, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

New "SEARCHLIGHT" Advertisements

received by December 5th will appear in December 15th issue, subject to space limitations.

Classified Advertising Division
ENGINEERING NEWS-RECORD
330 W. 42nd St., New York 18, N. Y.

POSITIONS WANTED
(Continued from page 67)

ENGINEERING EXECUTIVE 35 years experience Architectural and Contractural field from planning to completion on industrial, bank, hotel, hospital, office, church and housing projects. Available Jan. 1st. PW-1403, Engineering News-Record.

ATTENTION CONTRACTORS. Project manager or General Superintendent Graduate Engineer, registered, desires connection. Closing out large project east coast, available Nov. 20. Bridges, dams, tunnels, public and industrial bldg., oil refineries, heavy foundations, Cofferdams, labor relation expert, free to travel, States—So. America. Resume of experience as well as references. Young energetic, best of health, salary open. PW-1396, Engineering News-Record.

GENERAL OR Assistant Superintendent. Age 48, 28 years experience on concrete bridges, highways, docks, cassons, industrial foundations, concrete dams, southern location preferred but will go any place. 3 years on foreign projects. Available Nov. 15th. PW-1455, Engineering News-Record.

WANTED: CONSTRUCTION superintendent or labor foreman with 30 years experience on all types of roads, black top, concrete, etc.; pipe lines sewer and water, bridges—wants work—available now. PW-1426, Engineering News-Record.

DESIGN ENGINEER. B.S. & M.S. in C.E. New York state license in Professional Engineering and land surveying. Assoc. Mem., ASCE. 24 years experience as major design of bridges, piers, water supply, drainage, sewage disposal, industrial plants, including buildings and utilities. Resourceful; experienced in complex design methods in both consultant and contractor organizations, and accustomed to independent action. Seeking responsible design connection. PW-1450, Engineering News-Record.

GENERAL SUPERINTENDENT—estimator; well experienced in supervision and cost analysis of heavy engineering work. Graduate C.E., 42, locate anywhere. Available at once for responsible position with a large reputable contracting organization. Heavy engineering construction only. PW-1493, Engineering News-Record.

FIELD ENGINEER: Civil Graduate, 31 yrs. age. Have completed three contracts in Venezuela, Arabia, and Mexico on heavy construction. Desire foreign position. PW-1502, Engineering News-Record.

GRAD ENGINEER, 51, formerly consulting engineer, has owned and operated one of largest construction firms in far east. Offers vast knowledge of heavy and industrial construction to reliable company, either domestic or foreign. PW-1516, Engineering News-Record.

PROJECT MANAGER — engineer or supt., grad. eng. 51. 30 years experience in heavy and industrial construction: airports, harbor development, irrigation, flood control—domestic and foreign. Capable of making surveys and reports on hydro-electro, irrigation projects, etc. Desires assignments anywhere. PW-1515, Engineering News-Record.

STRUCTURAL DESIGNER, draftsman, detailer, checker, estimator; B.S., licensed. 25 years experience reinforced concrete and structural steel, all types structures. Responsible. Location immaterial. PW-1542, Engineering News-Record.

SUPERINTENDENT LIVING in Chicago desires position in Western or Southern States —15 years experience as Superintendent on Tunnels, Open cut sewers, Conduit lines, Cofferdam, Pumping stations and Disposal plants. PW-1530, Engineering News-Record.

AVAILABLE JANUARY first or sooner: Construction Executive, over thirty years both heavy and finished building construction, thorough construction man, skilled at estimating, sound field organizer, handle all phases. Interested in position where scope requires top man. PW-1513, Engineering News-Record.

MANAGER—ESTIMATOR—Engineer: 14 yrs. experience, public, industrial, commercial, multiresidential building; and heavy construction on roads, airports, sewers, water lines, reservoirs, marine facilities, railroads, quarry operations. Desires position with gen. contractor, material supplier or mfg., equipment mfr. or dealer. PW-1540, Engineering News-Record.

PROJECT MANAGER or Construction Supt. available immediately, 47, married, 24 years experience supervising construction projects. Industrial, mechanical, commercial, waterfront, water and sewerage systems. Organize and supervise field and office. Sober and reliable. Education: Civil Engineer. PW-1521, Engineering News-Record.

POSITIONS WANTED

CONTRACTOR'S ENGINEER, graduate civil, age 30, experience in heavy construction includes estimating, cost engineering, purchasing, and superintendence. Knows costs. Prefer South, other considered. Now employed. Available January 15. Best of reference. PW-1495, Engineering News-Record.

PART TIME WORK WANTED

REGULARLY EMPLOYED Professional Engineer seeks occasional structural design or steel detailing work for evenings, weekends. NYC area. PTWW-1404, Engineering News-Record.

BUSINESS OPPORTUNITY

Business For Sale.

Contractor wishes to retire. General Contractor estab. 32 years, large Garage for equipment, grounds, all late model machinery, 3 shovels, 4 bulldozers, Galion Grader, Galion 12 ton Roller, small rollers, 9 trucks, does a large volume of business in Northern New Jersey. Personnel and office available. BO-1519, Engineering News-Record.

WANTED

Used Gurley

Light Mountain Transit with Burt Solar. Must be in A-1 condition. A. H. McLain, La Grande, Oregon.

ANYTHING within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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WORK FOR TWO
GRADALLS
With Operators
DURING WINTER MONTHS
Send full particulars to
CWW-1425, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

Following Attachments—Near New
¾ YD. SHOVEL FRONT
¾ YD. DRAGLINE BKT.
FAIRLEADS
Above for ¾ Yd. Buckeye Machine $1,000.00 for all
NESBITT EQUIPMENT COMPANY
P. O. Box 11 Alexandria, Virginia

FOR SALE—VERY REASONABLE
1 Bucyrus-Erie Shovel, ¾-yd. bucket; 1 Byers Combination Shovel, Crane & Backhoe, ½-yd. 1 Austin-Western 10 ton Roller; 2 International Bulldozers, model T40; 1 Caterpillar model 35 Bulldozer.
S. F. PANDOLFO CO.
444 Asylum St. Hartford, Conn.
Tel. 6-0811, evenings 6-9614

REX TRUCK MIXER
4 Yard TM 403 — On Mack Chassis 6BX1SH1338—in Good Working Condition $2800.
CONCRETE CARRIERS INC.
800 Passaic Ave. East Newark, N. J.

SULLIVAN COMPRESSOR
Inter-cooler Radiator
One complete radiator, Part #23924 W, for Model WK-60. Factory price $518.00. This offered for $170.00. In original crate.
SORRELS SUPPLY CO.
Poteau, Okla.

EXPORTERS OF EQUIPMENT
Bargain price for lot consisting of:
(15) cranes and shovels ¾ yd. various makes and models. (3) Diesel Road Graders. (10) Road Rollers. (4) Steam Pile Drivers. (30) Scrapers.
Equipment in Philippine Islands—will place on board ship.
RAYMOND TOMASSI
3031 N. 16th St. Phila. 32, Pa.
Sagamore 2-1199

Overhead Traveling Cranes
Structural Steel Buildings
Tanks - Conveyors
BENKART STEEL & SUPPLY COMPANY
2017 Preble Ave., Pittsburgh 12, Pa.

FOR SALE
One Quickway mounted on Reo Chassis. Shovel boom but no bucket. Nice condition $3500.00
One Ingram roller. Ten-Fifteen ton, nice shape $2200.00
One Little Ford driveway roller, fine condition $1500.00
One Lorain 40 Shovel and back hoe. Wide pads, nice shape. Crane boom available $6800.00
One Roustabout crane mounted on Federal chassis. Good shape $850.00
One Coleman chassis (4 wheel drive), good rubber. Good for parts $350.00
KIMBLE BROTHERS
Franklin Ave. Campgaw, N. J.
Tel. Wyckoff 4-0088

FOR SALE
5750 ft. 9" Blaw-Knox Self-aligning used road forms, with stakes @ $.55 per ft., f.o.b. cars, Baltimore. Subject to prior sale.
THE HENRY H. MEYER COMPANY, INC.
110 So. Howard St. Baltimore 3, Md.

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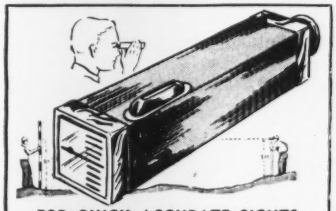

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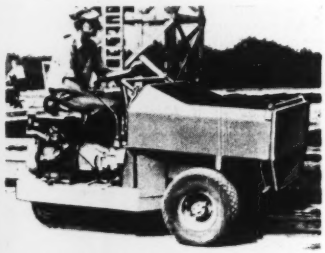

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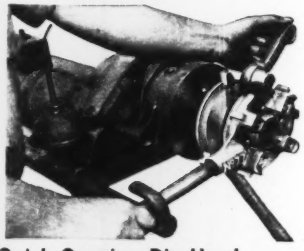

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Asphalt-saturated paper meets AASHO designation M 74-38 for a concrete subgrade paper. Leatherback Subgrade has a minimum weight of

(*Continued on page 74*)

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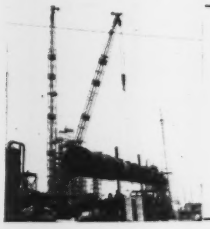

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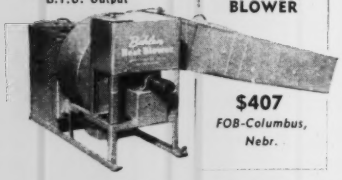

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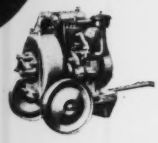

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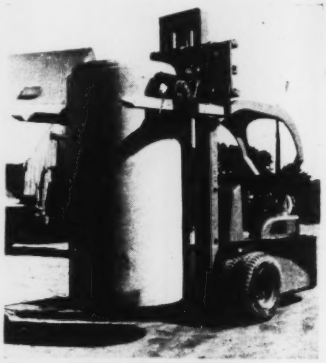
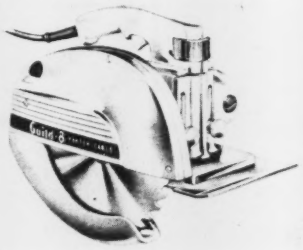
Two-cylinder, 2-stroke, high-speed diesel engine weighs, complete, 1,030 lb., and has a power rating of 52.5 hp. at 1,400 rpm. Feature of engine is use of the P&H cylinder head and line assembly. This cylinder head is changeable from one engine to another, and can be removed within 40 min. Engine is 28¼ in. wide, 40⅞ in. high, and 32¼ in. long.—HARNISCHFEGER CORP., DIESEL DIVISION, 100 LAKE ST., PORT WASHINGTON, WIS.



Tilting Load Grab

Attachment quickly adapts a Hyster YT-40 lift truck into a unit which will grab, lift, and transport cylindrical objects up to 36 in. in diameter. Swivel action of the arms permits the Load-Grab attachment to lower pipe from the vertical to a horizontal position.—W. S. NOTT CO., 201 N. 3RD. ST., MINNEAPOLIS 1, MINN.



New 8-In. Guild Saw

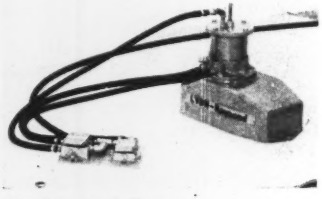
The Model A-8 saws weighs 13½ lb., and has sufficient power and cutting speed to handle heavy-duty crosscutting and ripping, maintenance work, and general carpentry. Tilt attachment enables the Guild saw to be adjusted for any angle from 45 to 90 deg. Abrasive cutting wheels are available for work with tile, metal, etc. Maximum depth of cut is 2⅞ in. Blade has a ⅝-in. standard round hole.—PORTER-CABLE MACHINE CO., 1747A N. SALINA ST., SYRACUSE 8, N. Y.

Safety Tread Ladder Step

All-magnesium step is manufactured with abrasive material cast directly into its surface. Eliminates ladder-rung balancing and frees both hands for the job. Platform measures 11½ x 7½. Also serves as a platform for holding tools, buckets, brushes, or other materials. Weighs less than 3 lb.—THE WATSON CO., 1437 MAIN ST., BUFFALO 8, N. Y.

Light Weight Hoist

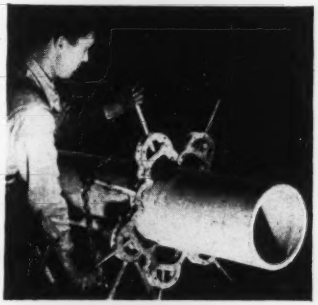
"Lug-All" is a hoist weighing only 8½ lb. yet it is able to lift a ton and a half. Instead of a chain which might kink, "Lug-All" employs a 133-strand aircraft cable which reels out easily without snagging. Limit for the cable is 15 ft., at which length the hoist capacity is 1,500 lb. When doubled (length 7½ ft.) the "Lug-All's" capacity is increased to one and one-half tons.—LINCOLN PRECISION MACHINING CO., NORTH GRAFTON, MASS.



Air-Powered Pump

Hydraulic pump uses air as its source of power. It is a single-acting unit in that it makes one stroke of its piston each time the valve, operated by a foot pedal, is opened. The release is operated by another foot pedal. Available in several styles and with several

sizes of oil reservoirs.—LYON-RAYMOND CORP., 14552 MADISON ST., GREENE, N. Y.



Lightweight Pipe Cutter

Sixteen-pound cutter is simple in operation—drop on to the pipe, snap one point together, and the pipe is being cut. Features the use of a large number of turning handles so that one is always is reached without bending, straining, or changing positions. With the Model 4, damaged ends may be cut as close as ¼ in. without weaving or traveling. Operates above or below ground. Can cut through asbestos-cement and clay pipe in a range from 3¼ through 15-in. outside-diameters, depending on the adapter used. Pilot also manufactures a machining tool for use on pressure pipe, and a tool for tapering and straight machining of Transite pipe.—PILOT MFG. CO., 420 MARKET ST., SAN FRANCISCO 11, CALIF.

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The Dandux tarpaulins are available in 81 combinations of sizes, weights and construction. The tarpaulins are made of 10, 12 and 15 oz. waterproof canvas, double sewn at the seams, hemmed on all sides and furnished with rustproof grommets and sturdy tie ropes. The Dandux roofing and deck cloths feature high-tensile

(Continued on page 78)

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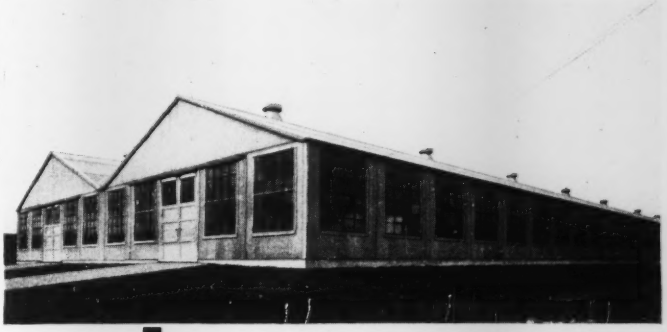

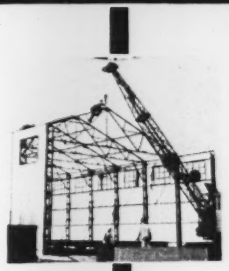

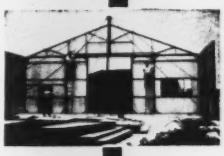

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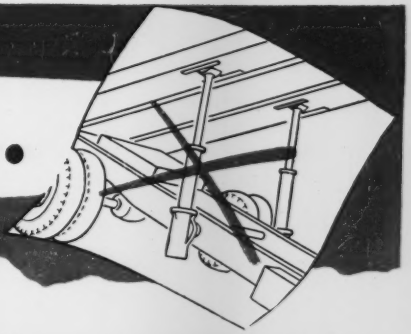

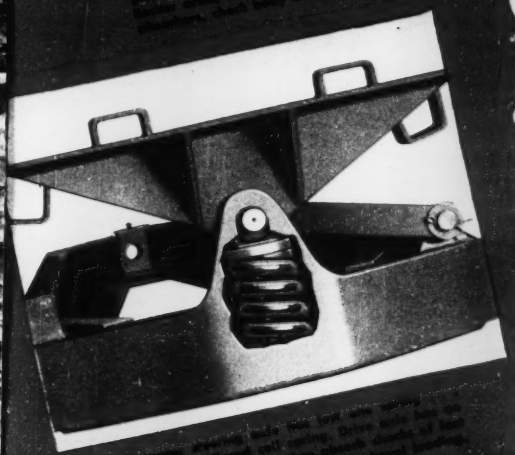

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wear. They are thoroughly impregnated and require no pre-coating nor do they have to be laid in wet paint. The Dandux cloth is made in 22, 30 and 36-in. widths and in light, medium, heavy and extra-heavy-duty weights.—C. R. DANIELS, INC., DANIELS, MD.

Weed-Spray Hose

Braided-type hose is designed and constructed to resist rubber-destructive compounds found in weed sprays and insecticides. It has a molded cover and will withstand a working pressure of 200 psi. The ⅜-in. size has an outside diameter of ⅞ in.; the ½-in., an outside diameter of ⅝-in.—THE B. F. GOODRICH CO., AKRON, OHIO.

Plastic Cement for Stucco

Advantages claimed for new plastic cement, recommended for all types of stucco work, are: Greater sand-carrying capacity, greater plasticity, accurate control, greater mortar strength, resistance to shrinkage cracks, and the durability of concrete made from portland cement. An air-entraining agent is a standard ingredient in production of the Calaveras plastic cement.—CALAVERAS CEMENT CO., 315 MONTGOMERY ST., SAN FRANCISCO, CALIF.

Dry Chemical Extinguisher

Fire extinguisher, available in two sizes, uses the dry-chemical principle. Entirely self-contained, it has no syphon tubes or valves within the cylinder to become clogged or inoperative. The special dry chemical used insures proper flow and that the discharge hose and nozzle remain empty until the extinguisher is actuated. Carrying Underwriters' Laboratories, Inc. rating of B-1, C-1, they are available in 20 and 30-pound capacities. The C-O-Two dry chemical is non-conducting, non-corrosive, non-freezing, and non-toxic. Effective on flammable liquid and electrical fires.—C-O-TWO FIRE EQUIPMENT CO., P. O. BOX 390, NEWARK 1, N. J.

Manufacturers' Publications

Bin Aerator Units—Two new bulletins provide complete information and specifications for the Bin-Flo aerator units. These aerators are designed to provide a simple means of injecting small volumes of low-pressure air into pulverized materials, which tend to pack and not flow readily from bins, hoppers, and chutes. One of the new bulletins gives complete information on the operation and use of the Bin-Flo aerator units including typical layouts, applications, and air supply data. The other bulletin lists specifications and prices for the aerators. These units can be used in conjunction with Bin-Dicators, or they can be installed independently.—BIN-DICATOR CO., DEPT. F-611, 13946 KERSHEVAL AVE., DETROIT 15, MICH.

Motor Scrapers—Two new pieces of literature describe the Model TS-300 Motor Scraper. One is a 17x22-in. two-color broadside which lists the features of the scraper under four headings—loading, hauling, spreading, and servicing. Actual job photos and descriptions are used in Form A-1210 to accentuate the various features. The other, Form A-1209, is a 4-p. folder describing all improvements and original features now available in the Motor Scraper. Case histories of actual jobs showing hours worked, yards hauled, etc., are also described.—LAPLANT-CHOATE MFG. CO., CEDAR RAPIDS, IOWA.

Shovels, Cranes, Draglines—Complete line of Lima shovels, cranes, draglines, and pull-shovels are briefly described in a 4-p. folder. Units described are the Types 34, 802, 1201, 604, 1002, and 2400. For each unit, there is an illustration of it in use and a brief description of its features, capacities, and advantages. A table of specifications lists capacity of dipper, length of boom or dipper handle, height of gantry, dimensions of the crawlers, travel speeds, and working weights.—LIMA SHOVEL & CRANE DIVISION, LIMA-HAMILTON CORP., LIMA, OHIO.

Diesel Tractors—Two new Caterpillar bulletins describe the precision manufacturing processes in the production of diesel track and wheel-type tractors; and the use of tractors, bulldozers, and related accessories in clearing, ditching, striaging, stabbing, wrapping, laying-in, and backfilling operations on pipeline projects. Form No. 12394, "Behind the Scenes With Big Yellow Machines", describes Caterpillar research facilities, inspection equipment, patterns and castings, welding, heat treatment, precision measurements, assembly, and final testing and shipping. It is designed to serve as a photographic tour of the Caterpillar plant. Form No. 12400, "It's Caterpillar All the Way", shows the application of Caterpillar equipment on jobs in the United States and Canada in the completion of more than 36,000 miles of scheduled pipelines.—CATERPILLAR TRACTOR CO., PEORIA, ILL.

Field-Service Unit—Truck-mounted field service unit Type PW-308, is described on a 1-p. data sheet. Feature of Bulletin E-232 is a floor plan showing the location of the various equipment including the power generator welding gases, tool compartments, arbor press, anvil, grinder, vise, compressor, and the other equipment furnished with this unit. The bulletin also contains a listing of this equipment, and an end view showing its general set-up. Drawings indicate three of the many types of maintenance services it can provide.—THE DAVEY COMPRESSOR CO., KENT, OHIO.

Engine-Driven Generators—Four-page folder describes complete line of diesel and gasoline-engine-driven generator sets designed for emergency or continuous service. These sets range in capacity from 5 to 250 kw. Bulletin 112 contains illustrations of ten typical units demonstrating the scope and application of these power plants. The bulletin also contains information on the company, on engine accessories and other equipment, applications, special features, and spare parts and service facilities. — INTERNATIONAL DIESEL ELECTRIC CO., INC., 13-02 FORTY-FOURTH AVE., LONG ISLAND CITY 1, N. Y.

Diesel Locomotive Crane—Bulletin describes a 10-ton diesel locomotive crane recommended especially for lighter-duty work. Its features include minimum weight, moderate first cost, and efficient, economical operation. Catalog No. 600 L-7 contains illustration of the Model 410 in operation, and front and rear views of the machinery deck with the cab removed. Specifications on the final page list capacities with a 40-ft. boom, travel speeds and drawbar pull, hoisting speed, slewing speed, and the 72-hp. diesel power unit.—AMERICAN HOIST & DERRICK CO., 63 ROBERT ST., ST. PAUL 1, MINN.

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READER COMMENT

Utility Service Tunnels

Sir: The editorial "Buried Trouble" (ENR Oct. 6, 1949, p. 13) fired my imagination. I visualize the city of the future as having a complete network of tunnels below the main street levels, within which will be carried, open for service and inspection, all conduits, steam lines, water lines, electric power cables, communication lines, etc. Such tunnels would have adequate room for the working personnel and equipment needed to repair the existing lines and install new ones.

Such a development could probably be carried farther to include permanent service conduit or trench systems through residential areas, perhaps as part of the curb and gutter, permitting top opening for quick inspection and easy maintenance and repair.

A system of downtown service tunnels and residential center service trenches would be enormously expensive, of course. But when we think in terms of 100 years and of the cost of burying, digging up and burying again all the various pipe lines and conduits, and when we think of the time spent testing for gas and water leaks, I am inclined to think that such a system would pay for itself within a reasonable time.

As a further point we talk a lot about the atomic bombing problem. One of the most sensible ways we could possibly hope to "bomb proof" our city of the future would be to provide the network of service tunnels referred to above. Such a system of tunnels could be designed to contain the entire population of the area within which it was installed. And it seems reasonable that a suitable system could be worked out to make these tunnels quickly available in an emergency.

CHARLES F. MCREYNOLDS
Los Angeles, Calif.

Beam Table Improvement

Sir: C. A. Martin's table for beams with laterally unsupported compression flanges (ENR Nov. 17, p. 46) represents an ingenious idea. However, a serious disadvantage in the use of the table is that the span of any beam selected from it must be checked against L_u, the span length for which $Ld\ bt$ is equal to 600. If L is less than L_u, the formula the author presents for f_b is not applicable, and it then must be ascertained that the maximum bending moment is not greater than that given by the formula $M_{max} = 20S$ in-kips.

The above shortcoming can be largely overcome if an additional column is inserted in the table, presenting the value of M_{max} for each beam. The table then would be used as follows:

The required beam criterion, C, is computed as in Mr. Martin's sample problem. Then the beam selected from the table is the lightest section that satisfies the requirements that (1) the C furnished must be at least equal to the C required, and (2) the maximum bending moment must not be greater than the tabulated value of M_{max}. The M_{max} column can be used also for the design of laterally supported beams. In this case, of course, the C column would be disregarded.

It should be pointed out that in the case of simply-supported, laterally unsupported beams in which the maximum moment occurs near the centerline of the span, the graphs provided in the AISC MANUAL accurately take into account the effect of the weights of the beams. This, of course, cannot be done in Mr. Martin's table, resulting in an important disadvantage when dealing with longer spans (where the effect of the weight should not be neglected).

HOWARD SIMPSON
Asst. Professor of Structural Design
Massachusetts Institute of Technology
Cambridge 39, Mass.

Why Abutments Settle

Sir: As described in the October 27 issue of the ENR the abutment on the District side of the new bridge over the Potomac River in Washington D. C. was constructed before the embankment of access. As a result, a considerable consolidation of a deep soft layer and a differential settlement of the abutment took place.

I would call attention to the following quotation from my book on Soil Mechanics (page 418 of the second edition):

"Construction of the *embankment should precede that of the bridge* if considerable settlement is expected. In practice just the opposite is generally done. However, if the embankment is constructed first and the earth mass is given time to consolidate the masonry will settle only under the weight of the bridge. Thus, its downward movement will be decreased, and hence the danger of cracking or uneven settlement reduced."

This quotation is self-explanatory. It is to be hoped that after the present object lesson embankments will be constructed prior to the abutments, if a heavy settlement is expected. Obviously, a small portion of the embankment has to be completed after the abutment is ready, but it should be as small as possible. I clearly realize all practical inconveniences of the procedure in question, particularly the difficulty in developing an adequate construction front for pile-driving and masonry. I believe, however, that it is preferable to try to obviate these difficulties than to lose time and money uselessly and risk the structure.

D. P. KRYNINE
Consulting Engineer and
Visiting Professor of Engineering
University of California

High Strength Concrete

Sir: Can you furnish me with information as to the composition of the concrete used in the prestressed girder (ENR Nov. 3, 1949 p. 18) which had a strength of 7,200 psi. after 28 days.

ALBERT P. BACKHAUS
Principal Building Engineer
Baltimore, Md.

EDITOR'S NOTE—We are informed that the concrete contained ¾-in. gravel coarse aggregate, 8½ bags of Type I cement per cu. yd. and 4.1 gal of water per sack of cement. The slump was 2 in., and an admixture, Plastiment, was used in the amount of 0.5 lb. per bag of cement. The concrete was vibrated both internally and externally during placing, and was cured by having a soaker hose run over it for a full week.

Error in Electrical Analogy

Sir: An error in Fig. 2(a) of "Network Flow Analysis Speeded by Modified Electrical Analogy" (ENR, Sept. 22, p. 19) has been uncovered. Opposite point "e", h is shown equal to 50 ft. It should be 80 ft.

Mr. Weston Gavett of Plainfield, N. J. is responsible for finding this error. In checking the problem by his grade and slide-rule method (Computation of Flows in Distributing Systems, Jour. American Water Works Assn., March 1943), he found that results agreed closely when 80-ft. head was used for this point. This finding is correct; the original drawings show 80 ft. head at point "e."

RICHARD W. KOHLER
Commonwealth Edison Co.
Chicago, Ill.

POINT AND HEAD DIMENSIONS FOR VARIOUS LENGTHS OF RAYMOND STANDARD CONCRETE PILE
AREA 408 SQ IN 22.8" DIA
AREA 314 SQ IN 20" DIA
AREA 254 SQ IN 18" DIA
AREA 201 SQ IN 16" DIA
AREA 154 SQ IN 14" DIA
37 FT
30 FT
25 FT
20 FT
15 FT
8" DIA POINT

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3. PIPE STEP-TAPER
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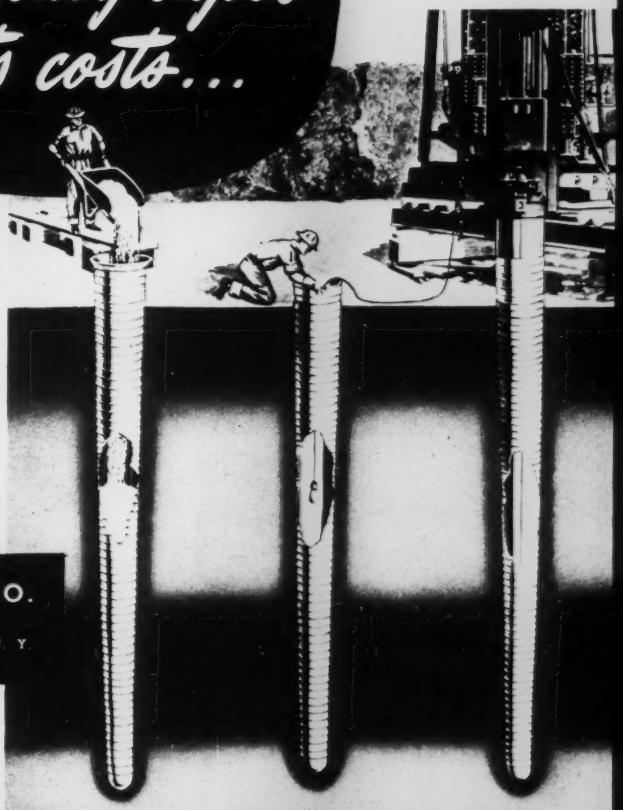
Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations; waterfront construction and harbor and river improvements.

1. STANDARD PILES

The heavy taper cuts costs...

Note that the permanent steel shell maintains the soil pressure developed during driving and while the concrete is setting, thus insuring a perfect pile free from distortion with a high load capacity.



Raymond Standard Concrete Piles have a heavy, uniformly tapered permanent steel shell. On friction piles, this taper acts like a wedge, giving these specific advantages:

1. Driving resistance is maintained.
2. The load is transmitted to the soil through the entire length of the pile.
3. The load can be carried by shorter piles, because of their greater carrying capacity.
4. Since shorter piles cost less to drive, the taper usually results in substantial savings.

Each of these statements has been tested and proved innumerable times. The evidence is at your disposal at any of our offices. Your inquiry is cordially invited.

FOUNDED 1897 — 50 YEARS OF PROGRESS

Raymond CONCRETE PILE CO.

140 CEDAR ST., NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

ROADSIDE REPORT *by Bert Snooks, owner of the Texas Hauling Company, Houston, Texas. G.V.W. ratings for Ford F-7's and F-8's shown are 19,000 lbs. and 21,500 lbs. respectively.*

"The FORD BIG JOB is more rugged, in my opinion, than any other truck made!"

"I THINK the Ford 145-H.P. BIG JOB is the best all purpose truck on the market," reports Bert Snooks. "I am operating three Ford F-8's and four F-7's with eight-yard bodies. These seven BIG JOBS are doing a better job than fourteen 2-ton trucks with four-yard bodies that I operated in 1947. My Fords have from 15,000 to 100,000 miles and the cost of repairs has been negligible. The Ford BIG JOB is more rugged, in my opinion, than any other truck made."

In terms of *Payload-Performance* the Ford BIG JOBS have no equal in their class. No other truck offers so much payload capacity in relation to chassis weight, with as high a horsepower rating per gross ton. This means bigger payloads within legal load limits. It means faster, more profitable delivery of big loads. Ford's high *Payload-Performance* is evidence of Bonus Built construction. Each of over 150 Ford Truck models is Bonus Built . . . built extra strong to last longer.

ONLY THE FORD BIG JOB HAS ALL THESE FEATURES

- ★ New 145-h.p. Ford V-8 engine for top performance.
- ★ Ford concentric dual-throat carburetor for more power, more economy.
- ★ New heavy duty 5-speed transmissions—overdrive or direct-in-fifth—for operating flexibility.
- ★ Big Ford power-operated hydraulic brakes; front 16-inch by 2½-inch; rear 15-inch by 5-inch double cylinder on F-7, 16-inch by 5-inch double cylinder on F-8. Air brakes also available for F-8.
- ★ Ford Super Quadrax single speed axles; two-speed axle available in Model F-8.
- ★ Large diameter (10-inch) wheel bolt circle with 8 studs to allow for extra-strong hub construction.
- ★ Million Dollar Cab with Ford Level Action suspension for greater driving comfort.
- ★ Nationwide service from over 6,400 Ford Dealers.
- ★ Ford Bonus Built construction for long truck life.

Gross Vehicle Weight ratings: F-8 up to 21,500 lbs., F-7 up to 19,000 lbs. Gross Combination ratings: F-8 up to 39,000 lbs., F-7 up to 35,000 lbs.

FORD 1949 *Bonus Built* TRUCKS 1959

BUILT STRONGER TO LAST LONGER

USING LATEST REGISTRATION DATA ON 6,106,000 TRUCKS, LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST LONGER!